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THE EARLY HISTORY OF THE ARMY MEDICAL SERVICE.

THE early history of the Army Medical Service is somewhat obscure and difficult to follow. But the germ of the system is to be found—at any rate, so far as regards its control—in the practice which obtained from early times of appointing a physician and a surgeon to accompany the monarch or the commander-in-chief when he went to the war. Naturally the men were appealed to by the commander in any medical difficulty that arose, and soon, in addition to being responsible for the health of its head, they were saddled with the additional care of the health of the army. One of the first appointments in this capacity was that of Thomas Muffett, who accompanied the Earl of Essex to Normandy in 1591. During the Civil War a serious attempt was made to place the medical department of the army under proper supervision, and to this end the Parliament ordered three physicians, one of whom was Paul de Laune, to be attached to the army under the command of the Earl of Essex. The commission lists of the Cavaliers and the Roundheads also show that to each regiment a regular surgeon was attached. In 1649 a further step was taken, and Jonathan Goddard was appointed by Cromwell to the post of "first physician" to the army. In this capacity Goddard accompanied Cromwell to Scotland and Ireland, where he was succeeded by Sir William Petty in 1652. The position of a single medical head in supreme authority over medical matters in the army was thus established, and a surgeon came to exercise supervision over surgeons. At first these chief physicians and surgeons held their appointments only during a war; but in 1660, when a standing army was authorized, a physician-general and a surgeon-general were appointed who exercised authority continuously during peace and war. The first physician-general was Thomas Laurence in 1685, and the first surgeon-general was John Knight in 1664. Physicians and surgeons-general were also appointed for Scotland and Ireland, and from 1660 until 1756 no material change was made in the method of government of the medical department in the army.

According to Richard Brocklesby, the first attempt to form an Army Medical Board of Control was made in 1756 by the Duke of Cumberland, who desired Viscount Barrington, Secretary of State for War, to establish a hospital board for the army. The board was composed of the Physician-General, the Surgeon-General, the Physicians to Hospitals, the Principal Surgeon of Hospitals, and the Purveyor-General. The board recommended that the physicians should examine, superintend, and control the hospital mates, but that the surgeons should be allowed to nominate mates for their own department. Much was expected from the deliberations of the board, but its career was suddenly cut short by the outbreak of war, when the physicians to hospitals and most of the surgeons were sent abroad, and the Principal Hospital Surgeon, after having been appointed Inspector of Regimental Infirmaries, gradually assumed all the functions of the board. He appointed all the hospital mates and accepted the examination at the Surgeons' Hall as a test of fitness. The board, therefore, virtually ceased to exist, and was not revived until 1793.

During the early part of the reign of George III the post of Physician-General was held by Sir Edward Wilmot from 1740 to 1787 and Sir Clifton Wintringham from 1787 to 1794. The combined posts of Surgeon-General and Inspector of Regimental Infirmaries was held first by Mr. Adair and afterwards by the great John Hunter.* On Hunter's death in 1793 the two appointments held by him were separated, and two of his surgical colleagues at St. George's, Mr. Gunning and Thomas Keate, were appointed respectively Surgeon-General and Inspector of Regimental Infirmaries. They were instructed to consult together regarding all army medical affairs, including the appointment of physicians, surgeons, and hospital mates. In this manner the Army Medical Board was reconstituted. On January 15th, 1794, after the death of Wintringham, Sir Lucas Pepys was appointed Physician-General as a reward for services rendered to the King during his illness in 1789. Pepys had never served in the army and had no special knowledge of the conditions and requirements of the Army Medical Service. From 1794 to 1798 the three members of the board performed their functions in a collective capacity, and, although they had their special departments, the board as a whole was responsible to the Commander-in-Chief for the acts of each member.

On March 12th, 1798, a new order regarding the Army Medical Board was issued by the Commander-in-Chief, by which many of its collective functions were abrogated, and each member was made more or less supreme in his own department.

Even after a patient study of the report of the Commissioners of Military Enquiry for 1808, and of the evidence given by the members of the board before the Committee of the House of Commons in 1810, regarding the Walcheren expedition, it is most difficult to determine the functions of the board in either its individual or collective capacity. The position, so far as it can be ascertained, was as follows: Collectively the board was supposed to meet if questions were submitted to it. It was to obey orders, but it was no part of its business to make representations. In their individual capacities the members were assigned special duties, but the conduct of these duties could not be brought under the criticism of the board as a whole. The Physician-General, with a salary of 40s. a day, was responsible for the choice of physicians, for the supervision of medical drugs, and for the examination of candidates for the posts of physician in the army. The Surgeon-General, who had a salary of 40s. a day, and also an extra £800 a year as the holder of the sinecure post of surgeon to Chelsea Hospital, appointed the surgeons for the army, and provided surgical drugs and appliances. He also occupied a seat on the Court of Examiners at the College of Surgeons for granting certificates to hospital mates. He consulted with the authorities on medical matters while the troops were on foreign service, and he received the returns of sick and wounded. The Inspector-General was entrusted with the duties of providing inspectors of hospitals and hospital mates. He had charge of regimental hospitals, and was surgeon to the staff of the Commander-in-Chief. In addition to his salary of 40s. a day, he received an equivalent amount on account of his position of Controller of Army Hospital Accounts. Finally, he was responsible for the provision of drugs for the Guards regiments, and superintended the education of cadets for hospital mates. To complete the description of this edifice of inconsistencies it remains to be said that the Guards chose their own surgeons, that the medical department of the ordnance was a separate concern under the control of an Inspector-General, and that the medical comforts were under the control of the Commissary-General. Finally, all the members of the board were engaged in active private practice.

In spite of all the manifest imperfections of the board, one great principle was instituted: the medical examination of all candidates was obligatory, although in the case of surgeons it was only an easy pass examination specially framed by the College of Surgeons for hospital mates.

The hospital system in the army was a cause of much trouble. Originally each regiment had a regimental hospital, under the care of the surgeons, but the board instituted general hospitals which were largely staffed by physicians, and the regimental hospitals were depleted in order to fill the general hospitals. Owing, it was alleged, to the want of military medical experience of physicians, the patients were not so well treated as in the regimental hospitals.

NOTE.—A report of Dr. Chaplin's first course of FitzPatrick Lectures, given in November, 1917, was published in the BRITISH MEDICAL JOURNAL on November 17th and 24th and December 1st in that year. The second course, from which excerpts are here made, will, together with the first course, shortly be published in a volume now in preparation.

* Hunter held his posts for scarcely a year, although he had been Deputy Surgeon-General for several years.

The method adopted by Sir Lucas Pepys, the Physician-General, in appointing physicians caused much discontent. When he assumed control, he at once established the rule that he would appoint as physicians only those who were Licentiates or Fellows of the Royal College of Physicians. He followed this plan in defiance of the express order of the Commander-in-Chief in 1798, that, "for physicians, a medical degree in an English university or a licence from the College of Physicians, although desirable, must not be considered indispensable." Scarcely any medical men already in the army held the licence, and consequently the superior posts of physician were given to men who had no previous connexion with the army. Staff surgeons and regimental surgeons, however able, were entirely shut out. In all, during his occupancy of the post of Physician-General, he appointed fourteen physicians, not one of whom had ever served in the army before.

As the result of these causes of complaint, the Commissioners of Military Enquiry investigated in 1808 the manner in which the Army Medical Board was performing its functions; their exhaustive report led to the thorough reorganization of the Army Medical Service and the inauguration of an era of increased efficiency. They advised a reconstruction of the board, so that it should be a consultative body with one supreme head assisted by a certain number of other individuals. They pointed out the injustice of the manner of selection for various medical posts, and indicated the way in which this selection should be conducted. Finally, they took exception to the loose manner in which the members of the board had supervised the contracts for drugs and appliances, and recommended the employment of some person skilled in accounts to check them.

In 1809 a military committee, appointed to give effect to these recommendations, advised the following changes:

1. That the medical department of the army should be presided over by a single head, to be called the Director-General, with a salary of £2,000 a year.
2. That two others, to be called Principal Inspectors, should be associated with the Director-General in the control of the department, with a salary of £1,200 a year.
3. That in future all promotions must take place among those already in the army, with due regard to seniority.
4. That the whole time of the Director-General and the Principal Inspectors should be devoted to their duties.

District surgeons were abolished, and the various grades in the service were settled as follows: Inspectors, Deputy Inspectors, Physicians, Staff Surgeons, Regimental Surgeons, Assistant Surgeons, and Hospital Mates, with respective salaries of, 40s., 20s., 15s., 12s., 7s. 6d., and 6s. 6d. per diem. It was the duty of the Director-General to examine hospital mates as to their professional knowledge, but they were to possess the certificates of the Court of Examiners at the College of Surgeons for regimental surgeons. Physicians were to be chosen from staff surgeons, or were to hold a degree in medicine from a university, or were to be licentiates of the College of Physicians. The Director-General, however, was empowered to hold in addition such examination as he thought proper.

These changes were made on February 24th, 1810, and Dr. John Weir was appointed the first Director-General, with Theodore Gordon and Charles Ker as the first Principal Inspectors. Weir did not hold his position long; he was succeeded in 1815 by Sir James McGrigor, the glory of army medicine, and from his assumption of office may be dated the real efficiency of the service.

While reform was slowly making headway in the control of the Army Medical Service, a considerable advance was taking place in the knowledge of medical conditions as they existed in the army. Sir John Pringle gave the first impetus to the study of diseases in the army by the publication, in 1752, of his *Diseases in the Army*, a book which marks the first attempt to systematize the subject, and to place it on a sure basis. The work is founded on the experience of Pringle while engaged as Physician-General to the Forces during the campaigns of 1742–48, in Flanders, Germany, and Scotland. This shrewd observer collected facts concerning the incidence of disease in the army, the effects of climate and locality, and the influence of variations of temperature and moisture on the health of troops while engaged on active service.

It is an appalling tale of serious disease constantly following the footsteps of the army, destroying its efficiency, and producing havoc in its ranks, compared with which losses in battle were trivial. The chief diseases responsible for these losses in effectives were dysenteries, remitting or bilious autumn fevers, and hospital fever or typhus, besides pneumonias, pleurisies, and rheumatisms, which were of frequent occurrence. Apparently hospital fever or typhus was present in every hospital where soldiers were crowded together, lying on straw which soon became rotten, and constantly breathing the pestilential air; in the open camp this disease scarcely ever attacked them.

For the prevention of these diseases Pringle advocated that the sick should be removed to small regimental hospitals rather than crowded together in the large general hospitals. He also laid much stress on the importance of fresh air, dryness, and warmth, and on the necessity for frequently changing the ground on which the camp was pitched. He studied with great care the climatic conditions and the endemic diseases of the countries passed through by the troops. In particular he described at length the insalubrity of the island of Walcheren, and had the Government paid attention to his advice the disaster of 1809 would have been averted.

In 1764, twelve years after the appearance of Pringle's work, Richard Brocklesby published his *Economical and Medical Observations tending to the Improvement of Military Hospitals*, a book scarcely less important, but far less widely known than its great forerunner. Brocklesby was a fearless writer, and as the lifelong friend and admirer of the great Burke it was only to be expected that his energies would be directed towards the reform of abuses. It required no little courage for a physician to the army to assail the imperfections of the system and its exponents, but Brocklesby threw caution to the winds and risked his position rather than allow what he conceived to be abuses to pass without comment. He had high ideals as to the duties of doctors and commanders towards those over whom they were placed, and he gave his opinions in no uncertain manner. Apart from the excellent style of the book, the observations contained were often far in advance of the times. Brocklesby was the first to point out and carry into practice the principle that hospital fever, or typhus, could only be checked by admitting abundant fresh air into the hospitals. At Sandy Heath, near Ripley, and at Winchester, he caused to be constructed temporary hospitals cut out of the chalk and sand in such a way that they admitted a constant current of fresh air, with the result that the fearful epidemic which had raged in those places quickly subsided. He also attacked the methods in vogue of commandeering, while on active service, small cottages to serve as hospitals, which were expected to accommodate forty sick men, although constructed to house a family of five or six people.

Concerning the organization of the Army Medical Service he was no less outspoken. He was of opinion that the surgeon of a regiment should occupy a position immediately after the field officers, and that both should work together for the preservation of the health of the troops.

Other physicians wrote concerning military medicine, notably Donald Monro and Cleghorn, but none of them exercised such a profound influence upon the subject as Pringle and Brocklesby. The work of these men was no doubt responsible for much of the progress made in this field of medicine, but it would have had little effect had it not been for the unremitting endeavours to secure departmental reform that came from within. The names of McGrigor, Borland, Jackson, and Young are closely associated with this movement, and it was largely owing to their ceaseless activities that the Commissioners of Military Enquiry were induced to examine the condition of the Army Medical Service in 1808.

After the system had been remodelled as the result of the report of the Commissioners for Military Enquiry in 1808 came Sir James McGrigor, and from the time he assumed control may be dated the modern army medical system. Although the Army Medical Service has passed through many vicissitudes since then, the main principles which have guided its destinies have not, I venture to think, materially changed.

It has always been stated that the Army Medical Board was deposed on account of its shortcomings with regard to the Walcheren expedition. This is a mistake, for the Commissioners for Military Enquiry had printed their report before that expedition was even thought of, and it was on the report alone that a change was decided upon. The

Walcheren expedition was a coincidence merely, which confirmed the War Office in its determination to effect a radical change.

The medical history of the expedition may be said to have begun with the capture of Flushing on August 15th, 1809, for at about that time sickness in an unusual degree began to be recorded among the troops quartered in South Beveland. The disease rapidly assumed alarming proportions, and by September 10th, when Lord Chatham returned with part of the army, leaving 16,000 men to hold the island of Walcheren, 8,000 of these were on the sick list. The diagnosis of the complaint presented no difficulty; it was clearly miasmatic in origin, and such as might be expected from a residence in the swampy islands of Beveland and Walcheren during the summer and autumn. Indeed, these islands had for a long time borne an evil reputation as being the most fever-ridden places in Europe. There was ample evidence of this, for fifty years before Pringle had given a full description of the complaint as it occurred in these same islands.

Much has been written concerning the conditions existing in Walcheren, but the most complete picture of the state of the army and the climate will be found in a letter written on September 11th, 1809, by Mr. John Webbe, the Inspector of Hospitals. He says:

> Independent of the existing records of the unhealthiness of Zealand, every object around us depicts it in the most forcible manner. The bottom of every canal that has direct communication with the sea is thickly covered with an ooze, which, when the tide is out, emits a most offensive effluvia. Every ditch is filled with water which is loaded with animal and vegetable substances in a state of putrefaction, and the whole island is so flat and near the sea that a large proportion of it is little better than a swamp, and there is scarcely a place where water of a tolerably good quality can be procured. The effect of all these causes of disease is strongly marked in the inhabitants, the greater part of whom are pale and listless. The endemic diseases of this country, remittent and intermittent fevers, begin to appear about the middle of August, and continue to prevail until the frosty weather checks the exhalation from the earth, gives tone to the debilitated frames of the people, and stops thereby the further progress of the complaints. It is computed that nearly a third of the inhabitants are attacked with fever every sickly season. . . . The fever which now unhappily prevails in the army first appeared among the battalions cantoned in South Beveland, and only began to demonstrate its influence here about the time that Flushing surrendered. The rapidity with which the disease has extended itself during the short period that has elapsed is almost unexampled in the history of any military operations. . . . As the progress of the mischief is much greater than could rationally have been calculated upon . . . it must be an inevitable consequence of the British troops remaining in Walcheren that a very considerable loss must be sustained.

Three days after writing his letter, Webbe was stricken down with the fever, and the duty of supreme direction fell upon Francis Burrows, the next in seniority, after death had removed Mr. Aveling. The necessity for more doctors became urgent, and on September 14th one staff surgeon and three hospital mates arrived, with the excuse from the Army Medical Board that the war in the Peninsula had made such excessive demands upon the supply of surgeons as to render it impossible to send more. The condition of the army was now deplorable, and the dispatches of the Commander, Sir Eyre Coote, dealt with little else than the ever-increasing sickness. The accommodation for the sick was of the worst description: there were no convalescent hospitals, the supply of blankets, wines, and medicines began to fail, and typhus fever made its appearance.

The Government at last became alarmed, and, in response to the urgent solicitations of Sir Eyre Coote, they requested Sir Lucas Pepys, the Physician-General, to proceed to Walcheren to deal with the terrible sickness which existed in that island. But to the astonishment of all, Sir Lucas begged to be excused, on the ground that he, the Physician-General to the army, "knew nothing about the investigation of camp and contagious disease"! In this dilemma the Government appointed a medical commission composed of Sir Gilbert Blane, with the title of Acting Physician-General, Dr. James Borland, and Dr. William Lempriere, and, in addition, Dr. James McGrigor, Inspector-General of Hospitals. Blane and McGrigor arrived on September 30th, and at once made a close examination of the conditions as they existed. They found the roofless churches, houses, and other buildings crowded with sick men, and every day bringing fresh cases in hundreds. They found the medical staff quite insufficient to cope with the work, and the stock of medicines and medical comforts almost exhausted, while pervading all they found an atmosphere of paralysis, panic, and despair.

The minds of Blane and McGrigor were soon made up as to the course to be pursued, and on October 1st they addressed a joint letter to Sir Eyre Coote. As a first precaution they recommended that about six thousand sick men should be shipped to England in ships of the line, since transports were inadequate. Sir Eyre Coote accepted this suggestion, and during the month of October the evacuation of the hospitals proceeded, with the result that for the first time the depleted medical staff was in a position to cope with the daily influx of sick soldiers.

Blane and his two colleagues returned home on October 10th, but McGrigor remained in supreme charge of all the medical arrangements. Here he laid the foundation of his immense reputation, and by his energy and sagacity quickly changed the state of medical chaos into one of tolerable efficiency. Sir Eyre Coote gave up the command of the army on October 29th, and was succeeded by General Don, the third commander in four months to occupy this unenviable position. It was a sorry army he was called upon to command, for he reported that he had only 4,534 men fit for duty, of whom about one-third was unfit for considerable exertion. But the agony of Walcheren was soon to be terminated; the Government decided to evacuate the island, and on December 9th the poor remains of the army embarked; all the heavy ordnance followed on December 23rd, and thus ended the famous expedition.

An exhaustive inquiry took place in 1810 by a Committee of the House of Commons, and the examination of the medical men connected with the expedition revealed an extraordinary state of divided control. The evidence showed that the authorities had never consulted the Army Medical Board with reference to the condition in Walcheren until the sickness began to be excessive. Indeed, until the expedition arrived in the Scheldt the board was ignorant of its destination, and therefore no special provision was made to counteract the dangers of the climate. Although it was proved that the medicines ran dangerously short, there was no evidence to show that the troops were ever in actual want. Blankets and other medical comforts were certainly in insufficient supply, and there was a totally inadequate medical staff to deal with the enormous amount of sickness, although some half-hearted attempts appear to have been made to remedy this defect. In fact, the chief blame that could be attached to the board was that, when the amount of sickness became known, it exhibited a supineness in grappling with the difficulty which nothing could excuse. No measures taken before the expedition started would have had any great effect upon the sickness, for the disease was malaria, which was endemic in Walcheren at the time the army landed. With the exception of some cases of typhus it was the sole cause responsible for the sickness, and removal from the evil climatic influences was the only remedy.

THE NAVAL MEDICAL SERVICE.

Materials for the study of the early history of medicine in the navy are extremely scanty, and it is not possible to describe with any degree of exactness the phases through which it passed until it became an established branch of the British Navy. Records from comparatively early times show, however, that physicians and surgeons were appointed from time to time to attend the commanders of various naval expeditions, and presumably to advise them concerning medical questions. One of the first of these appointments, if not actually the first, was that of Roger Marbeck, a Fellow, and the first Registrar of the Royal College of Physicians of London, who was appointed to attend on the Lord High Admiral Howard in his expedition to Cadiz in 1596. In the British Museum will be found a manuscript of Marbeck in which he gives an account of his adventures, and this may be regarded as the first report in existence dealing with the medical service of the navy. In the following year (1597), Henry Atkins, a president of the College, was appointed to the expedition of the Earl of Essex to Spain. The agonies of sea-sickness, however, only permitted him to go as far as Plymouth, where he was landed in an exhausted condition, and his place was taken by Thomas Moundford, another President of the College of Physicians.

In Cromwellian times it became the practice to appoint physicians to naval expeditions proceeding to foreign waters, and the duties attached to these appointments referred more to the care of the sick on board than to the care of the health of the commander of the expedition. Thus, Paul de Laune was appointed by Cromwell as physician to the fleet proceeding to Jamaica under Penn and Vennables. Soon after this the practice became established, and physicians and surgeons were regularly appointed to most of the warships in commission.

Early in the eighteenth century medical affairs in the navy were under the control of the Sick and Hurt Board, which was composed of medical and lay members. From an inspection of the minutes of this board in the Public Record Office, it does not appear that the authority conferred upon it was very ample, and for the most part its functions were advisory, and only when applied to by other naval departments. Indeed, at this time little care was taken of the health of seamen on whom depended the safety of these islands, and such solicitude as existed for their medical welfare was dependent almost entirely upon the energy and conscientiousness of individual naval surgeons. The standard of medical education required was of the lowest kind; they were obliged to provide their own drugs and instruments, and the authorities made no attempt to raise the medical service.

The work of the two great pioneers, James Lind and Gilbert Blane, produced a complete reformation in the Naval Medical Service. To Lind, perhaps, belongs the greater honour, for his was the first definite attempt to improve the position of medicine and hygiene in the navy. In 1754 he published his work on scurvy, a disease with which he was fully acquainted from the practical point of view. Previous to him many writers had, it is true, dealt with the subject, but in most of the accounts given no clear and precise description of the clinical features of the complaint is to be found. Lind sketched with really masterly hand the special features of this disease, and so ably did he delineate the picture that his description has been followed ever since. But he did more—he indicated the principles of the treatment of scurvy, and showed that, provided the proper antiscorbutics were carried on board ship, its terrible ravages would very soon become unknown. His wise advice, however, fell upon unheeding ears, and many years were to elapse before scurvy on board ship ceased to limit the naval and mercantile activities of this country.

In 1757 Lind published *An Essay on the Most Effectual Means of Preserving the Health of Seamen.* The book is not remarkable for its literary style, but is, nevertheless, full of shrewd observations and practical suggestions founded on an extensive acquaintance with disease on board ship. It is one of the most practical books ever written, and it is astonishing how true, even to-day, are many of the observations it contains. His recommendations concerning the care of the health of seamen, his insistence on the necessity for taking bark as a precautionary measure against miasmatic fevers, his remarks regarding hospitals on board ship, and the prevention of infection, had they been attended to, would have saved the lives of thousands of sailors. Probably, however, he was aware of the amount of prejudice his innovations would encounter, and that is the reason why his wise counsels are couched in a somewhat deferential tone.

Lind was essentially a pioneer in naval medicine and hygiene. In an age when no thought was given to the care of seamen on board fighting ships, when harsh and repressive discipline was common, he had the courage to point out to the authorities the importance of conserving the health of those on whom the country depended for its defence. His work was epoch-making, and from the time that he wrote, the attention of the Navy Board was drawn, though tardily, to this important subject.

If it be true that Lind sowed the seed of medical and hygienic reform in the navy, it is equally true that Blane tended and garnered the grain, and it is doubtful if the principles introduced by Lind could have obtained such wide acceptance without his powerful support. Blane was possessed of a most logical mind, a determined yet cautious spirit, and the ardour of a true reformer. He brought these qualities to bear on his work, and when he resigned the chief medical direction of the navy in 1802 a brighter era of medical progress and efficiency had already dawned. In 1785 Blane published his book, *Observations on the Diseases of Seamen*, and it quickly ran through many editions. The plan of the work bears a somewhat close similarity to that of Lind. Its literary style is easy, almost graceful, and the method, true to the nationality of the author, is mainly deductive. But the chief excellence of the work is to be found in its foundation on a wide clinical experience.

The book is divided up into three sections. The first gives a detailed account of the sickness in the fleet under the command of Lord Rodney while cruising in the West Indies, from 1781 to 1783, to which fleet Blane was appointed physician in charge. He ordered the surgeons of ships to take complete notes of the cases and to furnish exact returns. These results he compiled, and almost for the first time made use of the statistical method in a manner simple yet correct. Although Blane's statistics would by no means satisfy an actuary, still his logical mind kept him clear of those pitfalls in figures and their manipulation into which our profession is so prone to stumble. The net result of his tables was that the annual mortality in the fleet from disease amounted to 125 per 1,000, not an excessive mortality when judged by the standards of those times. The second section of the book deals with the causes and prevention of disease, and here Blane frankly admits that much of the subject matter is derived from Lind. Indeed, in this section, it is Blane the disciple who is advocating the principles of the master. In the third division of the work observations on fevers are given, and, from the point of view of clinical acumen, this part is the most able and original of all.

The work of Blane and Lind had a profound effect upon the Naval Medical Service, but they were not the only pioneers in this field. The labours of Thomas Trotter in the direction of a more efficient medical service in the navy, and towards improvement in the naval hospitals, although scarcely less important than those of Blane, were handicapped by a disposition to attack the ruling powers for their failure to promote reforms. Robert Robertson was another reformer who did much to quicken the sense of the Navy Board towards the imperfection of the Naval Medical Service.

Not only were surgeons urged to fresh activity by the work of these reformers, but the naval authorities began to show interest in the subject of the preservation of the health of seamen, and in 1795 Lord Spencer, the First Lord of the Admiralty, reconstructed the old Sick and Hurt Board, and, under the name of the Commissioners for Sick and Wounded, set up an authority composed of two physicians and one civil member. To these he delegated the direction of all medical matters in the navy, and for the first time medical men were responsible for the Naval Medical Service. Dr. Robert Blair and Dr. Gilbert Blane were the two medical commissioners, and Sir William Gibbons was the civil representative. Blair, however, soon retired, and Blane at once began to put into practice the principles he had advocated years before. In all he remained seven years in supreme control of the medical service in the navy, and when, in 1802, he retired, the Naval Medical Service had been thoroughly regenerated; abuses had been modified or removed, and the way was left clear for progress on prudent lines.

Blane was succeeded by John Harness, who had been appointed a Commissioner in 1800, and who, with organizing ability superior even to that of his predecessor, carried forward still further the work of reform. At this time it was felt that the work of the medical department of the navy was onerous enough to demand the undivided attention of the Commissioners, and it was therefore decreed that they should not engage in private practice. It was, however, found that the Commissioners for Sick and Wounded were not sufficiently in touch with the other departments in the Admiralty, and in 1806 the board was abolished. The functions of the board were now performed by the Senior Medical Commissioner, who sat at the Transport Board, and thus the control of medical matters was vested in one head. Inspectors of naval hospitals were appointed in 1804, who acted under the direction of the Medical Commissioner, and in 1817 the Medical Commissioner was again transferred, this time to the Victualling Board, but his functions were the same. Besides Harness, John Weir and Andrew Baird shared in

the work, and at the end of the reign of George III the principles of medical control in the navy under one authority were well established, and have served as the model for all subsequent changes.

BONE GRAFTING IN GUNSHOT FRACTURES OF THE JAW.

BY

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FOR rather more than two years we have had charge of the "Jaw Department" at the 1st Southern General Hospital, Birmingham, to which all cases of injuries to the jaws requiring special treatment are sent from the whole Southern Command. A very large percentage of these cases suffer from compound fracture of the mandible. Successful treatment involves (1) osseous union, (2) functional occlusion, and (3) avoidance of disfigurement.

In the majority of cases these results have been obtained by means of mechanical technique associated with due regard to the establishment of aseptic conditions. In some, however, satisfactory results cannot be obtained by this technique alone. Where there is a gap between the bony fragments greater than half an inch osseous union is rarely obtained unless (1) the fragments are allowed to approximate at the expense of normal alignment, or (2) a bone graft can be successfully introduced.

The gap between the fragments may be due to extensive loss of bone at the time of the injury or to subsequent necrosis from resulting sepsis. Sepsis in these cases is always severe and unless adequately combated in the early stages may be extremely persistent.

It is essential that firm osseous union should be obtained even at the expense of deformity, otherwise the power of mastication is gravely impaired. When, however, the gap is wide, the deformity resulting from allowing the fragments to approximate is so great and renders the fitting of suitable dentures so difficult that it can only be the extreme resort. A satisfactory functional and cosmetic result can then alone be obtained by successfully bridging the gap by means of a bone graft.

Other classes of cases in which surgical assistance is necessary to secure osseous union are those in which (1) there is overriding or malposition of osseous fragments; (2) mobility of the fragments from muscular action cannot be prevented by mechanical means—for example, short posterior edentulous fragments.

Operation in these cases consists in carefully dissecting away the scar tissue from between and around the ends of the fragments, rectifying the deformity by the division of contracted muscular attachments and fibrous bands, and immobilizing the fragments by means of a plate and screws. If, as is often the case, a gap remains between the fragments when pared and brought into correct alignment, a small graft is introduced, and the technique is similar to that described for bone-grafting.

Bone grafting in fractures of the jaw resulting from war injuries has presented many difficulties, and at first success was so rarely obtained that the attempt was given up and discouraged by very competent surgeons as not being worth while. The alternative of obtaining union by allowing the fragments to approximate led to so much disfigurement and such awkward mouths to fit with satisfactory dentures when the gap was a wide one that we felt compelled to persevere, especially because osseous union could not be obtained in a definite percentage of cases in spite of all sacrifice of normal alignment, etc. To discharge such cases with non-union was a confession of failure that could only be made with extreme reluctance.

The technique we now employ has been reached only after much experiment, many devices having had to be abandoned. Without enumerating the various stages through which we have passed, we think that a short account of the preparation for and the performance of the operation now in use will be helpful. Whereas success was the exception two years ago, it is now the rule, and it rarely happens that the graft fails to heal firmly.

Preliminary Preparation.

This is prolonged, and it may be many months after the original wound was received before the operation of bone grafting can be undertaken. The fracture is always complicated by sepsis, usually severe, and often by extensive injury to surrounding soft tissues. As soon as possible an *x*-ray examination should be made, after which the patient should be anaesthetized and the wound explored. Foreign bodies, teeth in and adjacent to the fracture, and loose fragments of bone should be removed. Larger fragments of bone with reasonably good attachments to soft tissues may be left in the hope that they will live. At the same time it is often possible to carry out some rough plastic work, the fragments of bone being replaced in as normal a position as possible and soft tissues being drawn together. Care must be taken to provide for efficient drainage and access to raw surfaces inside the mouth.

A more or less prolonged interval must now elapse while wounds are healing. Sepsis is apt to be persistent, and one or more subsequent operations may have to be performed for the removal of sequestra and drainage of pockets. During this interval careful attention must be paid to the maintenance of the patient's physical fitness by careful feeding and suitable environment. Much can also be done, by means of dental splints, etc., to correct or prevent displacement of the fragments of the jaw by muscular action and contracting scar tissue, even though firm bony union cannot be secured.

Finally, before attempting to bone-graft, it is very important that dribbling of saliva from the mouth should be prevented by plastic operations. This dribbling is very common when there is a defect in the lower lip, and saliva soaking into the dressings greatly increases the risk of sepsis in the operation wound.

After all wounds inside and outside the mouth have healed an interval of from four to six weeks should elapse before the bone-grafting operation is performed. During this time the patient is usually sent to a convalescent hospital.

Immediately before the operation all dental fixation splints are removed from the mouth. It was found that the retention of these militated against the success of the operation. They caused risk from post-anaesthetic vomiting, greatly added to the discomfort of the patient, and, where pressure was exerted by them in or near the operation area, increased the risk of sepsis. For these reasons, no attempt is made to fix the fragments of the jaw during the operation or for about two weeks subsequently. Everything which interferes with prompt "healing in" of the graft must be discarded.

Operation.

A skilled anaesthetist is essential, and we owe much to the skill with which Captain McCardie has maintained successful anaesthesia under very difficult conditions.

A curved incision is made in the neck beginning one inch behind the extremity of the posterior fragment and ending one inch in front of the end of the anterior fragment. The incision commences and finishes about half an inch above the line of the lower border of the jaw and in the neck runs about one inch below that line. It is only by carrying the incision well below the jaw and raising a flap that sufficient soft tissue to satisfactorily envelop the graft can be obtained. Often at the site of the fracture there is nothing but dense scar tissue which extends through to the mouth, and great care has to be taken in splitting this to avoid opening into the mouth, an accident which necessitates postponement of the operation. The unsatisfactory bed provided by this scar tissue constitutes one of the difficulties of bone grafting in these cases.

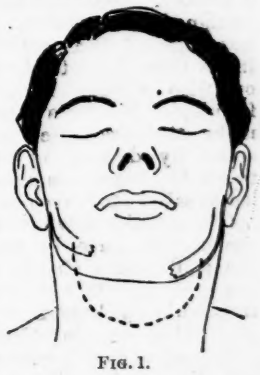

FIG. 1.

The incision is deepened by cutting upwards and inwards until the lower border of each fragment is reached. The soft tissues covering the outer surface of each fragment are then raised for an inch away from the gap and turned up in the flap. The ends of the fragments and the

fibrous tissue occupying the gap between them are now carefully cut away. Finally, each fragment is bevelled by cutting away a flake of bone from its outer surface with bone forceps. In this way raw bone is exposed at the ends of the gap and on the outer aspect of the fragments for about one inch from its extremity. All bleeding is then carefully arrested and the bone graft prepared.

After experimenting with bone from the ribs, the tibia, and from the jaw itself, the iliac crest was finally selected as the site from which to take the graft. The bone is tough and can be cut with bone forceps without splitting. Further, a graft can easily be obtained of any length or breadth and the natural slightly curved contour of the crest is approximately that of the jaw. The graft should be taken preferably from the same side as the operation wound, thus allowing the patient to lie comfortably on the opposite side.

An incision is made over the crest commencing at the anterior superior spine and extending as far back as required. The muscles are then separated on either side of the crest and pressed back by retractors. The bone is cut by an ordinary Horsley's hand saw. The graft should be two inches longer than the gap to be filled. If a more curved piece of bone is required, as to fill a gap near the chin, the graft is made to include the bone between the superior and inferior spines.

In this way a graft four inches long has been obtained which filled a gap extending from the angle of the mandible on one side to well beyond the chin on the other, and the curve was so accurate that no subsequent modelling was needed.

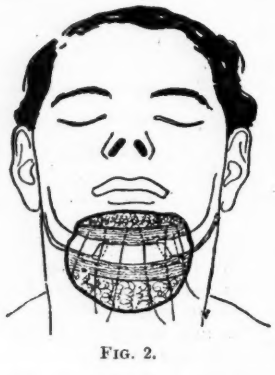

FIG. 2.

After removal of the bone the muscles detached from it are sewn together with catgut and the wounds closed. No inconvenience whatever seems to result. The ends of the graft are now bevelled with bone forceps, the bevelled areas lying on the prepared outer surfaces of the jaw fragments. In this way the graft overlaps the gap at each end for an inch. Two advantages result from this: (1) A broad line of bony contact between the graft and the fragments is provided with increased prospect of speedy firm osseous union, and (2) there is practically no risk of separation in the event of the gap being increased by subsequent manipulations during the application of dental splints, as a certain amount of sliding can take place without contact being lost.

No attempt is made to fix graft or fragments by plates and screws, by wiring, or even by dovetailing the graft into the fragments. All these measures have been tried and discarded. The presence of foreign bodies greatly militates against successful healing, a sinus down to the plate or wire almost invariably forming. Attempts also to make the graft act as a splint by dovetailing it between the fragments have not led to satisfactory results.

FIG. 3.

Our practice now is to keep the graft in place by sewing the soft tissues closely over the graft and the ends of the fragments by hardened catgut. This has the additional advantage of closely surrounding the graft with living vascular tissue and abolishing dead spaces in which blood clot and serum can collect. This improves the nutrition of the graft and diminishes the risk of sepsis.

Finally, the skin is approximated with a few interrupted stitches. No drainage is employed beyond that of leaving spaces between the skin sutures to allow of the escape of serum. A simple dressing and bandage is applied and the patient sent back to bed.

No attempt is made to reintroduce dental fixation splints until the wound is firmly healed and the compound fracture has been converted into a simple one. This usually occurs in two weeks, after which the case is treated as one of simple fracture of the jaw. Firm osseous union occurs in from two to four months, but it is inadvisable to fit the final dentures until at least four months have elapsed, and it is perhaps wiser to allow an interval of six months.

We intend to supply notes of cases in a subsequent paper. We desire to record our appreciation of the very valuable assistance at the operations that we have received from Captain Learmonth and Sister Dorothy Jones of the 1st Southern General Hospital.

INFLUENZA: ITS CAUSE AND PREVENTION.

BY

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MANY who have read the recent writings on this subject in the BRITISH MEDICAL JOURNAL must feel there is great need that those who have had special opportunities for the study of the *Bacillus influenzae* and its pathogenic action should make public any knowledge they have that may be useful at the present time. I therefore hope that the following notes may be acceptable.

The best method of growing the bacillus of influenza seems to be still unknown, though it was described and demonstrated before a scientific society in 1916 and mentioned in a paper published shortly afterwards.[1] It has been constantly used since 1914 in the laboratory of the Scottish asylums, where it was originated by the senior assistant, Mr. John J. Ritchie. It takes advantage of the fact that the bacillus of influenza is stimulated to growth by the mere proximity of certain other micro-organisms, especially those of the *catarrhalis* group and pneumococci. In this method, which may be referred to as the alternate drill method, generally three straight drills of, say, *Micrococcus catarrhalis* are made from bottom to top of a suitable agar surface, one at each side and the third exactly in the middle. Between these drills two drills are made from colonies of *Bacillus influenzae*. Abundant growth, suitable for the preparation of vaccines, can generally be scraped off after twenty-four hours' incubation, but it is of advantage to continue incubation for two or three days.

The best medium is haemoglobin agar, which, though it has been used in the laboratory of the Scottish asylums for many years and repeatedly described, seems still to be rarely used, at least in a correct way. I obtain haemoglobin serum from sheep's blood (secured with aseptic precautions), which has been allowed to clot and from which most of the serum has been decanted. The tubes are placed for an hour or so in a freezing mixture. When thawing takes place the remaining serum contains a strong solution of haemoglobin. About 1 c.cm. of this haemoglobin serum is added to each tube of nutrient agar in the fluid state, while at a temperature of about 60° C. The medium is allowed to set in a sloping position. It is important to use a higher percentage of agar than is generally prescribed for nutrient agar. The tubes should be incubated for twenty-four to forty-eight hours before they are used for the making of cultures, in order to test their sterility. In the preparation of vaccines the culture material obtained by the alternate drill method is scraped off by means of a platinum loop and placed in 1 per cent. carbolic acid in normal salt solution. Twelve to twenty-four hours at 37° C. suffice for sterilization. The preparation of the vaccine is completed by the gravimetric method. It is greatly to be deplored that bacteriologists should still adhere, with false conservatism, to the inaccurate, time-absorbing and inconvenient plan of standardizing vaccines in millions. In the gravimetric method the whole batch of dried vaccine is accurately weighed in the chemical balance and made up to a strength of 1 c.cm. = 1 mg.

Influenza bacillus vaccines for use should consist of a one-tenth dilution of the emulsion in the stock tube—namely, 1 c.cm. = 0.1 mg. The dose of influenza bacillus for therapeutic immunization ranges from 0.005 mg. to 0.1 mg.

In the course of the past five years, by the application of these methods, I have investigated considerably over a hundred cases of chronic infection by the bacillus of influenza. Chronic infections of this kind are very much more common than is generally supposed. The only point I wish to dwell upon in regard to these cases is that of the evidence they furnish regarding the pathogenic character of this bacillus, which apparently is still in doubt on the part of many who are able to give publicity to their views. In nearly all of these cases therapeutic immunization has been carried out. The focal and general reactions produced, and the successful therapeutic results that have been obtained, are consistent only with the view that the bacillus from which the vaccines were prepared was the chief cause of the catarrhal conditions from which the patients were suffering. Correct therapeutic doses commonly caused distinct focal reactions; overdoses were followed by the development of symptoms simulating those of influenza. A continuation of correct therapeutic doses over a period of from six to ten weeks almost uniformly resulted in complete recovery from the malady. If the bacillus of influenza had not been the chief cause of the ailment these results could not have been obtained.

In acute influenza, therapeutic immunization acts, in my experience, with equal success. A dose of 0.02 mg., repeated after twenty-four hours, generally causes the temperature to fall to normal within forty-eight hours. With ordinary vaccines there is apt to be a good deal of reactive disturbance from twelve to twenty-four hours after the first dose. For these and other reasons it is of advantage to use sensitized vaccines in acute cases. For the purposes of the preparation of these sensitized vaccines, two sheep are kept immunized against *Bacillus influenzae* at the laboratory of the Scottish asylums. The administration of a sensitized vaccine is followed by comparatively little reactive disturbance.

The most convincing evidence of the causal relationship of Pfeiffer's bacillus to influenza can be obtained from the phenomena that may be observed in the carrying out of protective inoculation. I made a number of these inoculations at the time of the summer epidemic; none of the cases contracted influenza. I have recent y immunized a much larger number of persons, but the evidence of the protection afforded has, of course, still to be obtained. I give, at intervals of from two to three days, successive doses of about 0.03 mg., 0.06 mg., and 0.12 mg., or two doses of 0.04 mg. and 0.12 mg. The smaller doses are given first in order to create a certain degree of tolerance of the toxin before the full dose required for complete protection is injected, and to provide against the possibility of hypersensitiveness, which occurs in all persons who are suffering from a chronic infection by the bacillus. After each of these doses most persons within twelve to twenty-four hours experience in mild degree the symptoms of influenza. If the dose of 0.12 mg. is given at once, severe disturbances are generally experienced. Any one who likes can have a controlled attack of influenza. If any sceptic will submit to the test, I believe I can convince him, by means of an injection of a full dose of the killed culture, that the bacillus of Pfeiffer is the cause of influenza.

It is very important that it should be understood that under existing conditions more is required than protective inoculation against the bacillus of influenza. In Scotland, at least, there has been for two months or longer also an epidemic of coryza, dependent upon infection by a special type of *Micrococcus catarrhalis*. Acute infection by this micrococcus generally causes, in addition to "cold in the head," severe headache, aching throughout the body, and some rise of temperature, especially at night. Correct therapeutic immunization is capable of cutting short the attack in forty-eight hours. Beyond question, any one suffering from this form of coryza is very specially prone to be attacked by the influenza bacillus. Most cases of acute influenza that I have recently investigated have been infected also by this special type of *Micrococcus catarrhalis*. When I am asked to protect against the bacillus of influenza I explain the importance of this other form of infection that is prevalent, with the result that all of the cases are given the double inoculation. The dose of this micrococcus is the same as that of the bacillus of influenza. In ordinary course it would have been about four times larger, but experience has shown that this type of *Micrococcus catarrhalis* produces much greater irritation at the place of injection than the ordinary strains, already notorious for their unpleasant local effect.

I regret that I feel obliged to criticize adversely the recommendations of the War Office Conference of October 14th, which were published in the BRITISH MEDICAL JOURNAL of October 26th. If the errors contained in these conclusions are not recognized now, I challenge their future comparison with the orthodox teaching as it will stand, say, two years hence. It is not properly recognized that the dosage for therapeutic immunization is essentially different from that required for protective inoculation. The doses recommended are, so far as my own experience enables me to judge, strangely wide of the mark. The 30 million dose of *Bacillus influenzae*, given as the initial one, works out at about 0.005 mg. This is a small therapeutic dose, and neither it nor the second dose of double the amount can be expected to afford any valuable degree of protection against infection. The introduction of pneumococcus and streptococcus protective inoculation is a mistake. These bacteria are not commonly spread from one person to another like the bacillus of influenza. It is quite different, however, in regard to *Micrococcus catarrhalis*, protection against which is omitted in these recommendations. The coryza caused by this organism is extremely infectious, and those who have acquired it are, beyond a doubt, specially prone to be attacked by *Bacillus influenzae*. Therefore it is hardly less important to protect people against this micrococcus than against the bacillus. The doses recommended are also open to criticism. The initial dose of 100 million pneumococci and the second of 200 million represent about 0.03 mg. and 0.06 mg. In my experience, if the patient happens to be suffering from a chronic infection by the corresponding type of pneumococcus, these doses will cause rather violent focal reactions. Regarding their value for protective inoculation I cannot speak. The doses of 40 million and 80 million streptococci (presumably *pyogenes* and *anginosus*) represent about 0.01 mg. and 0.02 mg. These, in my experience at least, are merely small therapeutic doses. Protective inoculation should be directed exclusively against attack from *Bacillus influenzae* and *Micrococcus catarrhalis*. It is a different matter when we have to carry out therapeutic immunization in a case of influenza. It is then of proved advantage to add to the suitable dose of *Bacillus influenzae* (0.01 to 0.04 mg.), small doses of a polyvalent pneumococcus vaccine (0.01 to 0.02 mg.) and of *Streptococcus pyogenes* (0.01 to 0.02 mg.), as well as of *Micrococcus catarrhalis* (0.03 to 0.06 mg.). If possible, the vaccines should be sensitized ones.

REFERENCE.

[1] *Journ. of Mental Science*, January, 1917.

BLOOD AGGLUTININS IN MENINGOCOCCAL ATTACKS.

By I. WALKER HALL, M.D.,

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(Report to the Medical Research Committee.)

A STUDY of the agglutinative action of human serum during an acute attack by meningococci involves the consideration of many factors.

If it be granted, for purposes of argument, that the available technique is beyond criticism, there is still a possibility that the reactive combinations evoked by the acting antigens of living, or lysed, cocci may differ from those which follow the injection of organisms killed by heat or other coagulative measures. The emulsions of cocci prepared for the quantitative estimation of agglutinins may also be placed in the category of variants. Owing to inconstancy of amino-acid nutrients or vitaminic stimuli, or a failure to produce artificially the conditions under which the meningococci proliferate during infection, the cultures may exhibit variations in vigour of growth or extent of autolysis. It has already been remarked by Gordon, Ainley Walker, Hewitt, and Gibson, that the specificity of the agglutinins induced by the injection of killed meningococci is more or less dependent upon the species of animal used for the purpose.[1] That is to say,

while the antiserums obtained from horses, rabbits, or man, all yield general agglutinins, they contain cross-agglutinins for individual strains or types.

Within certain limits, however, the contents of the animal immune serums are sufficiently well defined to permit of a preliminary differentiation between pathogenic and apathogenic cocci.[2] A statement of this kind must not, of course, be pushed too far, for from the practical standpoint it involves a necessity of erring on the side of precaution by the inclusion of doubtful positives among the definite ones.

The possibility of eliminating this margin of error is an incentive to investigate more closely the bases of the agglutinations and absorptions upon which our epidemiological recommendations are built. Perhaps it may become necessary to devise other methods, and to design some more definite problems for the functional capacities of the pathogenic and saprophytic organisms. There is at least the hope that the determination of the products they form from certain precise compounds may shed some light upon their standard of virulence.[3]

The acute stages of epidemic cerebro-spinal meningitis offer valuable opportunities for continued observation of the antigenic powers of the several types of meningococci. The prescribed routine of lumbar puncture, blood culture, nasopharyngeal swab, and urinary examination, brings an abundance of material at an early moment of the attack. The frequent lumbar punctures permit almost daily isolations of the infecting micro-organism. If the simultaneous collection of a few cubic centimetres of median basilic blood was adopted, the subsequent estimation of the agglutinin content in a number of cases would add considerably to our knowledge of the continuance and subsidence of the agglutinins during the course of the disease and the convalescence therefrom. It might also add to our information concerning the types and persistence of the cocci in the nasopharynx, and shed more light upon the conditions following inoculation and those associated with the determination of the "carrier" stage.

In this laboratory it has become a practice to make frequent isolations and agglutinations throughout the course of each case. This has been made possible by the co-operation and scientific care of Drs. B. A. I. Peters and R. E. Thomas of the Ham Green Isolation Hospital, and the interest of the house-physicians of our local institutions. For purposes of comparison with the work of other cerebro-spinal fever laboratories, the procedures of the Central Cerebro-spinal Fever Laboratory have been followed. The primary and secondary subcultures have been grown on pea-flour tryp-agar medium adjusted to an amino content of 25–7 formaldehyde figure with 0.5 per cent. addition of ascitic fluid. The emulsions have been prepared according to Gordon's suggestions, and when type coccal suspensions were needed those issued under the direction of Major Hine have been employed.

The work now in progress has not sufficed for the drawing of conclusions or the making of hypotheses. It will be at once recognized that a large number of cases are necessary for adequate data. Several points of interest have, however, arisen which contain suggestions for further lines of inquiry and offer some explanation of certain "carrier" questions now under discussion. For this reason it may prove useful to state some of the findings, in the hope that they may be considered worthy of criticism or confirmation.

In the early days of the epidemic a case occurred which was meningococcal fever according to clinical signs, but negative on several occasions from the standpoint of lumbar puncture. A rough attempt to determine the content of the blood resulted in the agglutination of some mixed strains. It was considered worth while to extend the observation to definite bacteriological cases, and when the standard types and serums were issued by the Central Laboratory the daily isolations of spinal and nasopharyngeal cocci were undertaken and the agglutination titres of the patient's blood determined.

In Table I the findings are summarized. To save space the end titres only are stated, and as there was not any result with Type IV coccus in the later cases this too is omitted.

It will be noted that in four cases the standard type cocci were agglutinated, and in four cases they were not affected in the early stages, although in two of the latter agglutination was obtained on subsequent days.

TABLE I.—*The Agglutinins developed with Different Types of Meningococcus.*

	Day of Disease.	End Titre of Patient's Serum on—			
		Stock Cocci.			Own Coccus Isolated Same Day.
		I.	II.	III.	
TYPE I.					
Case G.: Aged 29; death 35 days.	6	250	25	250	25
	7	250	0	25	250
	9	500	0	25	750
	11	500	0	0	500
	12	500	0	0	500
	15	500	0	500	750
	17	500	0	500	50
	20	125	0	500	50
	22	250	0	750	125
	23	250	0	500	500
	26	125	0	500	50
Case D.: Aged 2; recovery 30 days.	10	0	0	0	10
	16	0	0	0	50
	19	0	0	0	25
TYPE II.					
Case B.: Aged 21; death 20 days.	2	0	0	0	10
	3	0	0	0	500
	4	0	125	0	—
	5	0	250	0	500
	7	0	125	0	500
	9	0	250	0	—
	10	0	0	0	500
	17	25	0	0	25
	19	0	0	0	50
	20	0	0	0	25
Case A.: Aged 21; death 20 days.	1	0	0	0	50
	7	0	500	500	1,250
	14	0	250	250	0
	20	0	0	0	0
Case C.: Aged 13 mths.; death 30 days.	4	0	0	0	250
	6	0	0	0	250
	7	0	500	0	1,250
	15	0	125	0	1,250
	16	0	125	0	1,500
Case E.: Aged 27; death 4 days.	3 a.m.	0	0	0	25
	p.m.	0	0	0	25
	4 a.m.	0	0	0	0
	p.m.	0	0	0	0
Case P.: Aged 26; recovery 70 days.	33	0	50	0	50
	50	0	50	0	250
	52	0	250	0	250
	64	0	500	125	500
TYPE III.					
Case D.: Aged 32; death 7 days.	3	0	250	0	250
	4	0	250	0	250

After the initial agglutination, the end titre varied considerably, both for the case coccus and for the type standard suspension. This variation was not uniform. In some cases cross agglutinations were the rule. In others the changed titre was one of intensity only. The general impression was gained that the blood changes evinced a closely adaptative mechanism to alterations in the antigenic properties of the case coccus.

It was thought that these presumed adaptations might

be confirmed, or discounted, by submitting the type and case cocci day by day to the same sample of immune serum and comparing the results with the titre of the patient's blood for the type and case cocci, supplementing these findings by estimations of the titre of the patient's blood for case cocci obtained on previous days. For this purpose the spinal cocci were isolated on the same batch of media, emulsified, and killed at 63° C. for thirty minutes and standardized and used after standing for twenty-four hours. The results are stated in Table II.

TABLE II.—*Comparison of Agglutinations with Polyvalent Serum and Patient's Daily Serums.*
(All three patients belonged to Type II. Cases A and B died in 20 days, Case C in 30.)

	Day of Disease.	Polyvalent Serum on Coccus Isolated each Day. End Titre.	Patient's Blood on Coccus Isolated each Day. End Titre.	Additional Agglutinations.
CASE A.	1	12	50	
	7	125	1,250	Blood agglutinated 1st day coccus 750; on 17th day agglutinated 1st day coccus 25, and 7th day coccus 0.
CASE B.	2	50	0	
	5	250	500	Blood agglutinated 2nd day coccus 250.
	7	250	500	Blood agglutinated 2nd day coccus 125, and 5th 125.
	10	250	500	Blood agglutinated 2nd day coccus 25.
	18	125	25	Blood agglutinated 2nd day coccus 25.
	20	25	50	Blood agglutinated 2nd day coccus 10.
	21	50	25	
CASE C.	4	500	250	
	6	500	250	
	15	500	1,250	
	16	500	1,500	

Polyvalent Serum on Stock Type Cocci:

Type I ...	... 500	Type III ...	... 50
Type II ..	... 50	Type IV ...	... 750

In Case C it will be observed that the polyvalent serum agglutinated the case coccus to the same extent on each occasion, although the titre of the patient's serum increased on the fifteenth day. In Case A the coccus appeared to become more agglutinable in both the polyvalent and the case serum, although the increase in the latter is the more marked. In Case B the agglutinability of the coccus varied considerably with the stable serum and with the case serum. When the cocci isolated upon previous days were subjected to the action of the serum for the day, the values were altered. These results suggest the probability of some variation on the part of the coccus with regard to the stable serum, other things being unaltered. A somewhat similar change might account for the similar behaviour towards the case serum.

Blood Agglutinins and Nasopharyngeal Cocci.

The action of the blood on nasopharyngeal cocci is a matter of more than passing interest. Were it thoroughly worked out, it might be of assistance in some knotty problems. The degree of virulence inherent in the meningococci present in the nasopharynges of temporary and permanent carriers is difficult to determine. The primary cultures are, on the whole, less agglutinable than the subcultures. Even with the latter there is sometimes irregularity with serums from rabbits and horses. Some workers hesitate to make definite diagnoses from the findings. Hence there are a number of men undergoing segregation more from the standpoint of precaution than of precise diagnosis. The transient carrier harbours the meningococcus for a few days or a week. The temporary carrier becomes free after a month or so; earlier, perhaps, if the general metabolism is increased by outdoor exercise and change of altitude. The permanent carrier does not create conditions inimical to the coccus. Whether the reason lies in the flora or in the secretions is not yet finally settled. Gordon indicts the streptococci as an inhibitory factor,[4] but Vines states that in only a relatively small percentage of swabs is a pure culture of meningococcus obtained, and that if swabs are taken immediately after a meal the nasopharynx itself contains particles of food infected with salivary organisms.[5] This has been my experience also. Gordon finds that nasal mucus does not inhibit the meningococcus.[4] Are there other secretions, and is the disappearance of the coccus from the pharynx during the attack due to these? Flack obtained nasopharyngeal cocci from three cases in which the cerebrospinal fluid did not yield any meningococci, and found that the patient's blood agglutinated these up to 1 in 40 on the fifth day and 1 in 100 on the tenth day.[6] He does not state whether polyvalent serum had been injected, but a careful study of the cases under review puts the possibility of any quantitative influence of the injected serum quite out of count.[7] In two cases we were enabled to grow the nasopharyngeal coccus on successive occasions, and to submit it to the action of the patient's serum.

CASE I.—*Type II Coccus.*

The coccus was obtained from the nasopharynx on the third, fifth, eleventh, and eighteenth days. Polyvalent serum yielded a titre of 1 in 500 on each day. The patient's blood on the third day gave a titre of 1 in 50. With this same coccus the blood on the seventh day agglutinated to 1 in 125, but the blood obtained on the tenth and twelfth days gave negative results. The cocci grown on the fifth, eleventh, and eighteenth days, although well agglutinated by the standard serum, were not agglutinated by the blood removed on the same days. The coccus was therefore agglutinable by specific serum to the same extent, but the blood had lost its powers. At the time the blood failed to agglutinate the nasopharyngeal coccus it also failed to agglutinate a standard emulsion of Type II, and commenced to show cross agglutinations, apparently associated with the changing antigens of the spinal coccus. The question therefore arose as to the possibility of the prolonged duration of the coccus in the nasopharynx being due to the decreased action of the serum, and whether it is a general rule that the escape of tissue fluids plays a part in the disappearance of the coccus from the nasopharynx.

CASE II.—*Type II Coccus.*

The coccus was grown from nasopharyngeal swabs on the first and seventh days. It was agglutinated by a standard serum up to 1 in 125 on both occasions. The blood serum of the patient obtained on the first day gave a titre of 1 in 250 with the first day coccus; the blood of the seventh day gave a titre of 1 in 1,250 with the seventh day coccus. After this day the coccus disappeared from the nasopharynx. The blood of the seventh day agglutinated the first day coccus to 1 in 250 only, although it had agglutinated the seventh day coccus up to 1 in 1,250.

Remarks.

It is perhaps unnecessary to repeat that these findings do not permit of the advancement of any hypotheses. They are detailed merely as a contribution inviting consideration and extension. For our own part we have felt that the customary technique calls for adjustments, and we are devoting time to this side of the question.

Since these observations were concluded Fildes and Baker have published the results of the estimations of the blood agglutinins in twelve cases.[2] For the coccal suspension they employed a standard stock emulsion of the type belonging to the case but not the strain isolated from the spinal fluid of the patient. Their findings may be tabulated as follows:

Meningococcus, Type I	... 5 cases.	Two slightly positive.
Meningococcus, Type II	... 4 ,,	All negative.
Meningococcus, Type IV	... 3 ,,	All negative.

The examination in each case was made on one day only, namely:

Third and fourth days	... 2 cases.	Negative.
Tenth day	... 1 case.	Negative.
Sixteenth and seventeenth days.	6 cases.	Two weakly positive.
Twenty-first day ...	... 1 case.	Negative.
Thirty-sixth day ...	... 2 cases.	Negative.

They consider that these results indicate that blood agglutination as a matter of diagnosis in meningococcal attacks is valueless. Perhaps if the strains of meningococci obtained from each case had been compared with the stock cocci the figures would have gained fuller support. Also, if the serums had been examined more than once, the percentage of positives might have increased. With the more extended use of the method they may probably be inclined to modify their decision. From the standpoint

of diagnosis only, the routine estimations of the agglutinin content of the blood have here been found of such value as to justify a recommendation for their continuance.

The question of blood agglutinins opens up the whole question of the dependence which should be placed upon the agglutinability of meningococci with regard to the pathogenic properties. Vines draws attention to the fact that agglutinability varies in primary and subcultures and wonders whether it is possible to define a border line between pathogenicity and apathogenicity by using the agglutination test as a criterion.[5] In the present changing condition of our knowledge of the problem I am firmly convinced that no single one of the criteria in vogue suffices to determine whether Gram-negative cocci are pathogenic or not. The whole evidence obtained from the morphological, cultural, and serological observations demands review in every instance.

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NITROUS OXIDE AND OXYGEN IN COMBINATION WITH ETHER OR C.E. MIXTURE FOR NOSE AND THROAT OPERATIONS.

BY

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IN November, 1917, I read a paper before the Medical Society of London on "The use of nitrous oxide and oxygen with regulated rebreathing in military surgery," and in that paper I went into detail with regard to the actual administration, and gave my results up to that date. Since then I have had further opportunities of enlarging my experience of this method in civilian surgery, and have developed a technique for the administration of nitrous oxide and oxygen in combination with ether or C.E. mixture for nose and throat operations.

In working out the details of this method I have had the cordial co-operation of Captain Douglas Harmer, the senior surgeon to the Throat Department of St. Bartholomew's Hospital, and we have now arrived at a stage at which we are both confident that the results we obtain are infinitely better than we ever got before with the older methods.

There are three points that stand out as a result of our work:

1. The exceedingly small amount of C.E. mixture that is required.
2. The enormous difference in the patient's well-being after the operation, as compared with the older methods.
3. The excellence of the anaesthesia.

The technique, briefly, is as follows:

A hypodermic injection of morphine and atropine is given half an hour before the time of operation. I vary the amount of the dose with the nature of the operation and the condition of the patient, and in some cases I add scopolamine to the injection. The largest dose that I use (and this is the routine dose for the military cases) is morphine ¼ gr., atropine $\frac{1}{150}$ gr., and scopolamine $\frac{1}{150}$ gr.; whilst for some women, and children of about 15 years of age, the dose is usually morphine ⅛ gr. and atropine $\frac{1}{250}$ gr., and for small children I omit the hypodermic altogether, or at most give atropine $\frac{1}{250}$ gr.

The patient is then anaesthetized with nitrous oxide and oxygen with rebreathing in the method that I have described in my paper before the Medical Society, and as soon as anaesthesia is obtained, or, to be precise, just before that state is obtained, the nitrous oxide and oxygen is allowed to run through the ether or C.E. mixture until the requisite depth of anaesthesia is obtained; the face-piece is then removed, and the anaesthesia is maintained by running the combination either through the nose or into the mouth. The patient's condition will determine whether the mixture is given throughout the operation; usually it is unnecessary, the C.E. being only required from time to time for a few seconds.

Given in this way, and provided always that the airway is kept open and the breathing is not unduly obstructed by sponges, the anaesthesia will meet the requirements of most operators. Throughout the whole anaesthesia the patient should be pink in colour, there should be no cyanosis whatever, nor should there be any pallor; both of these conditions are signs of overdosage and of a bad administration of the anaesthetic. The former is easily remedied by additional oxygen but the latter is more serious.

It is a remarkable fact that in several of the anaesthetics I have given for the enucleation of tonsils only 1 drachm of C.E. mixture has been used, and with this in combination with the nitrous oxide and oxygen the anaesthesia has been all that was required.

This method as I have described it sounds easy, but I do not advise any one to try it until he has made himself thoroughly acquainted with the various points of nitrous oxide and oxygen anaesthesia with rebreathing for long cases. That I consider necessary as a preliminary training.

Apart from the ordinary throat operations, such as enucleation of tonsils, submucous resection of septum, and the like, I have used this method for bronchoscopies and oesophagoscopies, and have been particularly struck by the ease and quietness of the anaesthesia, and the rapid return to a condition of well-being and comfort after the operation.

The more I see of the anaesthesia produced by nitrous oxide and oxygen with rebreathing in combination with ether or C.E. mixture when necessary, the more am I convinced that whilst the anaesthesia is wholly adequate for the surgeon's needs, and can be prolonged as long as is necessary, so that there is no need for hurry on the part of the operator, the condition of the patient, both during and after the operation, is infinitely better than with ether, chloroform, or mixtures thereof.

To give but one instance. Even if the patient is "sick" after the anaesthetic, he does not have that horrible sickly smell of ether or chloroform hanging about himself and the room for hours and it may be days, but he is rid of his anaesthetic mixture in a few minutes, and is his normal self again.

During the administration of this combination of anaesthetics for nose and throat operations I have observed that—

1. Complete relaxation of the jaw is obtained, even in muscular subjects, and with this goes also the relaxation of the soft palate as well.
2. The swallowing and cough reflexes are easily abolished, and yet are restored almost immediately on withdrawing the anaesthetic.
3. The amount of bleeding appears to be less, both during and after the anaesthetic, than with other methods.
4. The rapid recovery to consciousness after the operation is a point of extreme importance, for one never sees patients lying, after the operation, in that deep unconscious state that so frequently follows the administration of chloroform, but on the contrary they are conscious in a few minutes, have a good colour, and are well.

The number of cases that I can now report as having been anaesthetized with nitrous oxide and oxygen with rebreathing, and with ether or C.E. mixture when necessary is—

Administered by H. E. G. Boyle	2,002
Administered by Captain Trewby and residents at 1st London General Hospital	1,165
Total	3,167

There have been no fatal cases.

I regret that circumstances over which I have no control have prevented me from publishing in detail the particulars of a machine that has been made for me for the administration of this anaesthetic, but I hope in the near future to be able to do so.

ON December 10th the Belgian Surgical Society, at its first meeting since July, 1914, elected Professor Depage president. A strong protest was recorded against the infamous manifesto issued in October, 1914, by ninety-three German professors, and a resolution was passed that no intercourse should be held with German scientists until their calumnies, especially those directed against Belgian medical men, have been publicly disavowed.

HISTORICAL ACCOUNT OF TONSILLECTOMY.

BY

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EXTIRPATION of the tonsils must have been commonly practised at a very early period. The first clear mention of it is made by Celsus (A.D. 10) in his *De Medicina*, cap. vii, sect. 12, but he speaks of excising the tonsils with such familiarity that it was evidently considered a very ordinary procedure. He writes:

> Tonsils which remain indurated after inflammation, if covered by a thin membrane, should be loosened by working the finger round them, and then torn out; but when this is not practicable, they should be seized by a hook and excised with a scalpel.

Aetius (A.D. 490) gives the following account of the operation:

> The portion which projects—that is, about one-half of the enlarged gland—may be removed; those who extirpate the entire tonsil remove at the same time structures which are perfectly healthy, and in this way give rise to serious haemorrhage.

Paulus Aegineta (A.D. 750) gives precise instructions as to excision of the tonsils.[1] He would not operate on them when inflamed, and describes them as fit for removal when they are white, contracted, and have a narrow base. The head of the patient is held, his tongue pressed down with a spatula by assistants, and the tonsil, being seized and drawn outwards by a tenaculum, is cut out by the root. Albucasis (A.D. 1120) takes Paul of Aegina as his model, and gives the same directions, but he is more cautious in his advice, and dreads haemorrhage.[2]

After this period the operation became almost obsolete, and succeeding writers omit all mention of it. Even Ambroise Paré (1509) advised tracheotomy where serious enlargement of the tonsils exists.[3] Fabricius (1540) believes "the operation is neither easy nor altogether safe."[4] Guillemeau, the pupil of Ambroise Paré, ligatured or cut away the diseased masses, but did not agree with removal of the entire tonsil.

In 1637 Severini, during an epidemic, removed large portions of the glands by caustics, hook, or semicircular knife; but for a whole century afterwards excision of the tonsils was discountenanced. Dionis (1672) opposed altogether the removal of the tonsils,[5] while Sharp (1688), a pupil of Cheselden, also feared to excise the tonsils and condemned the operation,[6] although he removed small portions of the gland by ligature and cautery.

The surgical treatise of Heister was the most popular textbook during the first half of the eighteenth century, and his opinion is as follows:

> This operation is not only too severe and cruel, but also too difficult in the performance, to come into the practice of the moderns, because of the obscure situation of the tonsils.

After 1740, however, the operation by means of the tenaculum and the bistoury was again much practised, the credit of the revival being largely due to Wiseman.[7] His practice was to ligature the tonsils and then to cut off the projecting portion. From 1757, when Caqué commenced to excise tonsils at the Hôtel-Dieu of Rheims, excision of the tonsils became one of the recognized operations of surgery, the dread of haemorrhage being proved to be groundless. Instruments were improved, and new methods invented of performing the operation. Almost every eminent surgeon made some modification of the instruments used for the purpose by his predecessors. The method most generally favoured was to employ a bistoury or pair of scissors, the blades being curved or straight; an assistant pressed down the patient's tongue, the surgeon seized the tonsil with a vulsellum, and, drawing it out, cut off as much of it as he could. As late as 1880 many surgeons still operated with the knife or bistoury, but the guillotine and the wire écraseur were then coming into use. A general anaesthetic was seldom given, but sometimes potassium bromide was given in large doses for several days before the operation.

Velpeau (Chassaignac, op. cii, p. 109) reported four cases in which the internal carotid artery was laid open whilst a portion of the tonsil was cut away with the bistoury. About 1875 the common carotid artery was successfully ligatured at the London Hospital for continual haemorrhage after excision of a tonsil. A tanno-gallic acid gargle was used for persistent oozing, or ice was given to suck,[8] or marsh-mallow lozenges.

The method of Celsus of tearing out the tonsils by the finger was revived in 1860[9] by the Italian Borelli, but again deservedly fell into disrepute.

The fear of haemorrhage was a spectre which dogged the steps of all the early operators on the tonsils, but with newer methods of removal and knowledge of the anatomy of the parts, this is a much rarer complication nowadays.

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OPERATING TO THE CLOCK.[1]

BY

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RECENT reports of the treatment of war wounds by Sir Anthony Bowlby and others, in which particular stress has been laid on the necessity for operative rapidity in grave cases, tend to diminish the diffidence which one naturally feels in publishing personal matter, and to strengthen the conviction previously expressed, that more lives may be saved by surgeons "putting themselves under the authority" of the clock than probably has been heretofore generally appreciated,

In operative surgery, as in sport, there are some who focus the situation and put their ideas into action more promptly than others, but this by no means implies that the lightning operator or fast player is necessarily the best exponent.

Celerity in operation, apart from cinema or sleight of hand exhibitions, is, and always must be, sternly subject to one irrefragable law—there must be no scamping of the cardinal principles of surgery. Any infraction, notably inadequate attention to injured blood vessels, interferes with the physiological repair of wounds,[2] and not infrequently determines the fate of the patient. But given conscientious workmanship, it is reasonable to infer that the success of many desperate operations must be in ratio to the time occupied in their performance, since experience has amply proved that the longer the exposure the greater becomes the risk of shock and other complications.

The publication of this series of 1,200 and odd operations, each completed within twelve minutes, a number limit suggested by clock (and which contains 1,000 operations concluded within a ten minute limit), is solely intended to impress on surgeons, who may not, as yet, have found their stride, that design, detail, and execution form an interdependent trio, which by constant association and practice develop automatic co-ordination between the brain and hands, admitting of concentration and rapid application, with a corresponding economy of time, which may, in some instances, be the vital factor in the operative result.

A glance at the appended list will suffice to demonstrate that most of these operations are simple repetitive ones, and consequently renders it obvious that personal dexterity becomes a very secondary consideration in comparison to the methodical arrangement of the procedure; I have little hesitation in stating that, irrespective of the magnitude of the operation, it is the minute study of details and the correct order of their application which constitutes good workmanship. If I were asked what detail in particular merits most attention, the reply would be: keeping the parts from start to finish under manipulative domination, as there is nothing so prodigal of blood and time and nothing so bewildering as to allow severed structures—for example, the flaps of an amputated cervix uteri, the stump of a subtotal hysterectomy, or the incised wounds of a gastro-enterostomy—to slip out of control at the crucial moment and flood the whole field with blood. Also I think that there is nothing so conducive to expeditious surgery as knowledge of the anatomy of the part, nothing so detrimental as unnecessary chatter, and there is no greater handicap than that obsession of overcare which often ends in fumbling into or laying the very traps which the indecisive brain is labouring to avoid.

Operation.	Minutes.											
	1	2	3	4	5	6	7	8	9	10	11	12
Appendicectomy,[1] some with drainage [208]	—	—	—	2	12	9	18	26	23	59	23	25
Salpingo-oöphorectomy, single ... [111]	—	—	—	—	4	4	7	25	2	39	6	24
Salpingo-oöphorectomy, double ... [6]	—	—	—	—	—	—	—	—	—	3	1	2
Pyosalpinx (single); extirpation, drainage [8]	—	—	—	—	1	—	2	—	—	2	—	3
Oöphorectomy, single ... ... [4]	—	—	—	—	—	—	—	—	—	1	1	2
Oöphorectomy (single); appendicectomy [6]	—	—	—	—	—	—	—	1	1	1	1	2
Oöphorectomy (double); appendicectomy [2]	—	—	—	—	—	—	—	1	—	—	1	—
Hydatid tumour of omentum, enucleation [1]	—	—	—	—	—	—	—	—	—	1	—	—
Extrauterine gestation[1] ... ... [2]	—	—	—	—	—	—	—	1	—	—	1	—
Hysterectomy, vaginal ... ... [14]	—	—	—	—	1	1	1	2	—	3	2	4
Coelio-hysteropexy[8] ... ... [36]	—	—	—	—	1	1	1	7	2	16	2	6
Hysteropexy and appendicectomy ... [3]	—	—	—	—	—	—	—	—	—	2	1	—
Colporrhaphy ... ... [3]	—	—	—	—	—	1	—	1	—	—	—	1
Cervix uteri, excision ... ... [4]	—	—	—	—	1	1	1	—	—	—	—	—
Cholecystectomy, drainage[4] ... ... [13]	—	—	—	1	—	2	1	1	4	2	—	2
Cholecystostomy ... ... [8]	—	—	—	—	—	1	—	—	2	4	—	1
Choledochotomy, drainage ... ... [2]	—	—	—	—	—	—	1	1	—	—	—	—
Coelio-hepatotomy (marsupialization; hydatid)[1] ... ... [15]	—	—	—	—	—	2	—	1	1	5	4	2
Coelio-hepatotomy (abscess), drainage [6]	1	—	—	—	1	—	—	1	1	1	—	1
Hepatotomy, transthoracic; excision of rib; marsupialization[1] ... ... [23]	—	1	—	—	2	2	3	3	1	5	—	6
Nephropexy (Lane's operation) ... [21]	—	—	—	—	—	—	1	5	6	2	4	3
Nephro-lithotomy (single); drainage [10]	—	—	—	—	1	—	—	1	1	3	1	3
Nephro-lithotomy, lumbar (double); large impacted "funnel calculi"; uraemia; recovery ... ... [1]	—	—	—	1	—	—	—	—	—	—	—	—
Decapsulation of kidney (double Edebohl-operation) ... ... [1]	—	—	—	—	—	—	—	—	—	—	1	—
Prostatectomy, suprapubic; drainage [23]	—	2	3	4	3	3	2	3	1	—	—	2
Lithotomy, suprapubic; drainage ... [4]	—	1	—	—	1	—	—	—	1	—	1	—
Urethrotomy, ext.; perineal vesical drainage; Wheelhouse operation ... ... [3]	—	—	—	—	—	—	1	—	1	—	1	—
Urethrotomy, ext.; perineal vesical drainage ... ... [9]	1	1	2	1	—	1	1	—	—	—	—	2
Hydatid, post-vesical; drainage ... [1]	—	—	—	—	—	—	—	—	—	1	—	—
Varicocele; excision[5] ... ... [42]	3	7	2	4	4	6	4	—	2	9	—	1
Hydrocele; excision[1] ... ... [55]	—	1	1	4	8	6	8	5	6	10	2	4
Hernia, femoral (Bassini) ... ... [5	—	—	—	—	—	—	1	1	1	—	—	2
Hernia, inguinal, radical cure (Bassini, Halsted, O'Conor[6]) ... ... [80]	—	—	—	—	—	1	3	4	13	26	15	18
Hernia, strangulated inguinal ... [1]	—	—	—	—	1	—	—	—	—	—	—	—
Hernia, umbilical ... ... [7]	—	—	—	—	1	—	—	3	—	2	—	1
Hernia, ventral[1] ... ... [9]	—	—	—	—	—	2	—	1	—	4	2	—
Haemorrhoids (modified Whitehead op.)[7] [204]	—	—	—	5	26	20	22	24	21	44	7	15
Pruritus ani (Ball's operation) ... [2]	—	—	—	—	1	—	1	—	—	—	—	—
Post-colic abscess; drainage ... ... [2]	—	—	—	—	—	1	—	1	—	—	—	—
Empyema; excision of rib; drainage [2]	—	4	1	2	2	1	2	2	—	4	—	2
Hydatid of lung; excision of rib; marsupialization[8] ... ... [3]	—	—	—	—	2	—	—	—	1	—	—	—
Hydatid of pleura; excision of rib; drainage ... ... [2]	—	—	—	—	—	—	1	—	1	—	—	—
Gastrostomy... ... ... [2]	—	—	—	—	—	—	—	—	—	—	—	2
Colostomy ... ... [4]	—	—	—	—	—	—	—	—	1	2	1	—
Mesenteric serous cyst; drainage ... [1]	—	—	—	—	—	—	—	—	—	—	—	1
Hydatid of mesentery; enucleation [1]	—	—	—	—	—	—	—	—	—	—	—	1
Arthrotomy of ankle; drainage ... [36]	—	1	6	2	14	2	8	3	—	—	—	—
Arthrotomy of elbow ,, ... [2]	—	—	—	1	—	—	—	—	—	1	—	—
Arthrotomy of hip ,, ... [2]	—	—	—	—	—	—	—	—	—	1	1	—
Arthrotomy of knee[10] ,, ... [130]	—	8	9	20	35	6	13	7	4	20	2	6
Arthrotomy of shoulder ,, ... [6]	—	—	1	—	2	—	—	2	—	1	—	—
Arthrotomy of wrist ,, ... [17]	—	—	4	3	7	1	—	1	—	1	—	—
Excision of hip (head of femur) ... [1]	—	—	—	—	—	—	—	—	—	—	—	—
Fractured patella—sutured ... ... [1]	—	—	—	—	—	—	—	—	—	—	—	1
Fractured tibia—Lane's plates[9] ... [3]	—	—	—	—	—	—	—	—	—	—	—	3
Cancer of tongue ... ... [2]	—	—	—	—	—	1	—	—	—	—	—	1
Amputation of breast (mastitis and adenoma) ... ... [7]	—	—	—	—	—	—	1	1	—	2	1	2
Semilunar cartilage (excision) ... [2]	—	—	—	—	—	—	1	1	—	—	—	—
Sciatic nerve stretching (open op.) ... [14]	—	—	—	—	2	1	3	1	1	3	—	3
Thyroid cyst (excision) ... ... [1]	—	—	—	—	—	—	1	—	—	—	—	—
Varicose veins (excision)[11] ... ... [32]	—	—	—	1	—	2	5	3	3	10	1	7
Coccyx (excision) ... ... [4]	—	—	—	—	2	1	—	—	—	1	—	—

The figures in brackets in the first column represent the total number of cases for each operation.

As to the personal equation I have nothing to remark except that the time resultant in my operations is largely due to the stimulating anticipatory help of loyal assistants.

In conclusion I wish to add that I never take the time of any operation; this is always done independently by two assistants, who likewise attend to the instrument and sponge count, and who transmit their figures directly to the hospital registrar, to whom I am indebted for all the enclosed figures.

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Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

THE AGE INCIDENCE OF THE PREVAILING EPIDEMIC OF INFLUENZA.

HAVING observed every epidemic of influenza since 1889 I have been much impressed by the liability of the present influenza to attack children and young adults. During the last three months I have seen several hundred cases, and only two of these (both very mild ones) have been over 50 years of age; in fact, most have been well under 40.

This is very different from all my previous experience, in which no age was exempt. Can the reason be that in this epidemic a streptococcus is the active agent? If so, the present epidemic resembles scarlet fever, also a streptococcal disease, in which the age incidence is most marked in children and young adults, and people over 50 are almost immune. If, on the other hand, a streptococcus is the active agent, is it not strange that the visible changes in the throat are so little marked, for I have not seen a single case in which follicular tonsillitis or enlarged cervical glands were present?

Bedford. W. GIFFORD NASH, F.R.C.S.

SURGICAL EMPHYSEMA DUE TO PERFORATION OF THE LEFT BRONCHUS.

ON November 1st I saw a child, aged 4 years, who was stated to have had influenza about a fortnight previously, leaving him with a cough which had been better the last few days. On the morning of November 1st he seemed in much better health; but he did not eat breakfast, and on picking him up in order to dress him the mother found that his body was swollen.

On arriving at the house about 11 a.m. I found the whole trunk, neck, and the right eyelids were greatly swollen and of a doughy consistency, but no crackling could be elicited. At 11.45 the left eyelids became swollen, and the swelling extended down the arms. By 12.45 the swelling had extended to about the middle of the forearms and down the thighs almost to the knees. A tympanitic note could be obtained on percussion over any part of the swelling, and emphysematous crackling could be elicited on palpation. The swelling of the eyelids was so great that on attempting to separate them the inner surface of the lid became everted, obscuring the eyeball, and the scrotum was blown up to the size of a billiard ball. The child died at 12.55.

At a *post-mortem* examination made by Captain H. C. Tayler, at 3.30 the same day, the swelling was of the same extent, and on making an incision over the sternum the air could be heard escaping from the tissues; this was much more marked on opening the left pleura. The tissues in the anterior mediastinum were of a frothy appearance; both lungs were collapsed and congested. The heart, lungs, and trachea were drawn out and separated by cutting above the larynx, and some pus was discovered in the nasopharynx; no appearance of an abscess was found in this position, but on slitting the trachea longitudinally more pus was found at the bifurcation and could be squeezed from the left bronchus. On opening the bronchus a perforation about one-sixteenth of an inch in diameter was discovered just beyond the bifurcation of the trachea apparently connected with what seemed to be a suppurating lymphatic gland; and through this, no doubt, the air was forced by the movements of respiration.

Eastleigh. R. R. GARRETT, M.R.C.S., L.R.C.P.

LEVADITI reported to the Société de Biologie, Paris (November 16th), the curious observation that a wound which has been infected by streptococcus is little likely to be reinfected by the streptococcus from another wound in the same individual, and that the same is true of an attempt to reinfect the wound with a cultivation of the streptococcus from the man's own wounds. On the other hand, the wound can be reinfected by the introduction of a virulent streptococcus from another person. Such an observation is rather bewildering, but the most probable explanation seems to be that the virulence of the streptococcus is reduced during the process of cure. At a previous meeting he had stated that the streptococcus disappeared from wounds treated with a lipovaccine and an ether-sensibilized vaccine made from the streptococcus.

Reports of Societies.

LETHARGIC ENCEPHALITIS.

AT a meeting of the Medical Society of London, held on December 9th, the President, Major A. F. VOELCKER, being in the chair, Colonel E. FARQUHAR BUZZARD read a paper on lethargic encephalitis. He thought that the medical profession had never realized that encephalitis, or inflammation of the brain, was by no means an uncommon condition. He was convinced from his own experience that a large number of cases of epilepsy, of mental deficiency, of hemiplegia, and of diplegia, were the permanent results of attacks of encephalitis occurring in early childhood, many of these disabilities dating from an illness occurring in the first few years of life, the history being that a healthy child had been taken ill suddenly with convulsions, fever, vomiting, etc., and that the diagnosis of meningitis, or gastritis, or teething, had usually been made; he thought that this large group of cases could be properly attributed to the virus of poliomyelitis. It should be remembered that there was a form of encephalitis which had the constitutional disturbances, the age incidence, the seasonal exacerbations, the sporadic and epidemic types, and the immunity from second attacks which were shared by measles, scarlatina, and other acute specific fevers, and that it presented an inflammatory lesion of a particular tissue in the same way as typhoid fever, diphtheria, and small-pox displayed inflammatory lesions of other tissues. This form of encephalitis had been shown to be due to the virus of poliomyelitis, and it should be noted that the disease was an acute one, running its course in a few days, but often leaving permanent results in the form of paralyses, mental defects, and epilepsy.

Lethargic encephalitis was an entirely different disease, the symptoms often being present for days or even weeks before the intensity of the process reached its height; the age incidence and seasonal incidence also were entirely different from those of poliomyelitis.

Three groups of cases were recognizable: (1) Those in which the infection mainly attacked the brain stem, the patients suffering from asthenia, lethargy, and disorders of ocular movements such as strabismus, diplopia, nystagmus, and ophthalmoplegia. (2) Those giving the clinical picture of acute paralysis agitans, with the same constitutional disturbances, but displaying no oculo-motor signs or symptoms. These were examples of encephalitis with its chief incidence on the basal ganglia, and in particular perhaps on the globus pallidus. (3) A third group, which he intended to consider, in which the force of the inflammation was spent upon the cerebral cortex, causing difficulty in diagnosis in regard to the possible presence of cerebral tumour, cerebral abscess, or cerebral haemorrhage. An account was then given of four fatal cases, in two of which Colonel Sargent had operated on account of obviously increased intracranial pressure. All four patients were over 40 years of age, but none of them presented cardio-vascular changes suggesting the possibility of cerebral haemorrhage as a diagnosis. In none did the clinical history conform closely to that of cerebral haemorrhage, but suggested some more subacute lesion, and naturally gave rise to the question of abscess or syphilitic thrombosis. In all four cases the Wassermann reaction of the cerebro-spinal fluid was negative. He had learnt from this experience that patients over 40—and even over 50—years of age might be the victims of encephalitis producing the general symptoms of hemiplegia, aphasia, hemianaesthesia, or hemianopia, and that a naked-eye examination of a brain on the *post-mortem* table was not sufficient to discriminate between an ordinary cerebral haemorrhage and a haemorrhage which was only an accidental occurrence in the course of an encephalitis. When no gross signs of disease were obvious in the cerebral arteries to account for a haemorrhage, it was essential that microscopical investigation should be carried out in order to determine the cause for the blood extravasation. We must look on the presence of thrombosed cortical veins associated with haemorrhage in the neighbouring brain substance as strongly indicative of an inflammatory process.

Microphotographs were shown illustrating the pathological lesions found in the brains of the patients whose histories had been given, the remarkable way in which the vessels of the brain reacted to this inflammatory process being apparent. The chief features were: (1) perivascular infiltration, mainly with small round cells; (2) small capillary haemorrhages, suggesting a gradual oozing of blood through the damaged walls of small veins and capillaries; (3) thrombosis of small and middle sized vessels in different states of organization; (4) ischaemic softenings presenting the appearance of the haemorrhagic infarction seen in other organs; (5) subarachnoid haemorrhages and cellular infiltration of the leptomeninges; (6) general neuroglial proliferation; (7) changes in nerve cells, which in some places showed chromatolysis and in others a process resembling coagulation necrosis.

Lethargic encephalitis was not a new disease, endemic cases occurring from time to time. We were not yet in a position to say what was the nature of the infection, or to point to any method of treatment likely to abort or cure the disease. The experience of these four cases led him to think that operative intervention in the way of decompression was really contraindicated in spite of the presence of increased intracranial tension. Three of the patients died, partly at any rate, from haemorrhage, and it was hard to believe that decompression could be beneficial when this haemorrhagic tendency existed.

With regard to prognosis, at present we could only say that some cases recovered completely, others survived the acute stage but carried with them in after-life permanent defects due to the morbid process, whilst a certain number died either from toxaemia or haemorrhage in the acute illness, or from some complication following it.

Lieut.-Colonel PERCY SARGENT spoke of the appearance of the brain, etc., during life, as seen at the time of operation. The dura mater was friable or thickened, and there was blood on the surface; the cortex was friable. Operation had been of no use in either of these cases, but might prolong life. A better method might be repeated lumbar puncture.

Dr. F. G. CROOKSHANK, speaking from the epidemiological point of view, said that we had no right to distinguish between epidemic prevalences and to say that they were due to a different disease because of difference in seasonal and in age incidence.

Captain J. G. GREENFIELD agreed that it was not a new disease. There was negative evidence from the clinical, bacteriological, pathological, and epidemiological points of view that it was not the same disease as poliomyelitis. Positive evidence showed that poliomyelitis was a lymphogenous infection—was carried by the lymph stream—whereas this was a haematogenous infection, the blood vessels bearing the brunt of the disease.

Dr. EDMUND CAUTLEY also spoke.

Colonel BUZZARD, in reply, agreed that if one could recognize these cases for certain one would not decompress. With regard to Dr. Crookshank's contention, he said that encephalitis was a prevalent disease. From the clinical standpoint there was a form of encephalitis like poliomyelitis and due to the same virus. From the pathological side he had examined numerous cases of encephalitis of the poliomyelitis type, and in these it was difficult to say where the infection began or ended—the whole nervous system was affected. In lethargic encephalitis, on the contrary, the condition was patchy. Poliomyelitis was an inflammation of the nervous matter; lethargic encephalitis was an inflammation of blood vessels with consequent effect on nervous tissues.

COMPLICATED PREGNANCY.

AT a meeting of the Section of Obstetrics and Gynaecology of the Royal Society of Medicine, held on December 5th, the President, Dr. J. D. MALCOLM, in the chair, Dr. G. DRUMMOND ROBINSON showed a skiagram of a foreign body in the gravid uterus. The patient, an unmarried woman, was admitted to hospital with a history that, thinking she was pregnant, she had tried to pass a crochet needle, the hook end of which was covered by a metal cap, into the uterus per vaginam. On withdrawing the crochet needle she was alarmed to find that the cap had not come away with it. She had haemorrhage from the vagina, and, becoming frightened, came to the hospital. The uterus was bulky, and the os slightly patulous. No part of the metal cap could be felt, but it was clearly seen in several *x*-ray photographs. Shortly after the skiagrams were taken the patient passed a two-months ovum, together with the metal cap, spontaneously during an action of

the bowels. The cap was two and one-tenth inches in length. Dr. Drummond Robinson also read a communication on a case of labour in a paraplegic woman. The patient, aged 31, had had seven children; she was admitted to Westminster Hospital in August, 1909, under the care of the late Dr. R. G. Hebb, suffering from paraplegia of recent origin probably due to transverse myelitis in the dorsal region of the cord. Examination in October revealed that the patient was three months pregnant, and she was transferred to the obstetric ward under the care of Dr. Drummond Robinson. During the time that preceded her confinement in April, 1910, she suffered from bedsores, many rises of temperature, two attacks of congestion of the lungs, and offensive urine. The gravid uterus increased in size abnormally slowly and at the full term was only as large as an ordinary seven months uterus. Labour took place 281 days from the cessation of the last menstrual period. It was painless but otherwise entirely normal. Involution and lactation were normal. In 1897 Dr. Amand Routh read a paper before the Obstetrical Society in which he gave notes of seven similar cases, the only ones up to that date recorded in medical literature (the most recent occurring in 1874), together with notes of a case of his own. Since that date no other similar case had been recorded. The fact that parturition and lactation occurred normally in these cases, and in animals after removal of the lumbar part of the spinal cord, suggested that these functions were carried on without the aid of the higher nerve centres. The physiological stimulus to both these functions appeared to be the result of some chemical substance or substances probably produced in some part of the reproductive system and conveyed direct to the uterine muscle and mammary gland by the blood stream. This view was supported by the most recent experimental research.

Mr. CLIFFORD WHITE showed microscopic sections of small portions of the kidney removed during nephrotomy on two patients suffering from puerperal anuria. In both patients the partial suppression of urine had lasted some ten days, and in both immediate recovery followed incision of the fibrous capsule of the kidney. The chief change shown by the microscopic sections was marked dilatation of the tubules. Thrombosis of the vessels was absent. It was suggested that in cases of puerperal suppression of urine the inflammatory swelling, producing increased tension within the fibrous capsule of the kidney, caused pressure on the collecting tubules and so prevented urine reaching the ureter. This was supported (*a*) by the fact that in some eclamptic patients passing little water the kidney was hard on direct palpation during Caesarean section, (*b*) by the dilatation of the tubules present in portions of the kidney removed during operation while the suppression still continued, and (*c*) by the presence of casts immediately after incision of the capsule although they had been previously absent.

Dr. LAPTHORN SMITH said that there were no doubt cases like this where suppression was due to pressure on the tubules. In eclampsia he thought the suppression was due to pressure on the large veins, and as soon as this was removed the blood could circulate.

Captain G. S. FAIRBAIRN said that many cases of suppression had no eclampsia at all, and often no symptoms except coma. He disagreed with the previous speaker. In eclampsia it was a toxin which caused the damage, and opening the capsule would do little good.

Dr. RUSSELL ANDREWS said that anuria was only part of eclampsia; the most remarkable part was the profound toxaemia.

SPINAL ANAESTHESIA.

AT a meeting of the Section of Anaesthetics of the Royal Society of Medicine, held on December 6th, the President, Mr. LLEWELYN POWELL, being in the chair, Mr. F. S. ROOD opened a discussion on the present position of spinal anaesthesia. He said that he had always used stovaine except in about 250 cases in which novocain had been employed, but he preferred stovaine, as the muscular relaxation was more complete. A 5 per cent. solution of stovaine was used, to which was added 5 per cent. of dextrose. Being heavier than the cerebro-spinal fluid, the position and extent of the anaesthesia obtained with it could be regulated by the position of the patient during injection. He had used stovaine in saline in a few hundred cases, but found it was impossible beyond a certain point to limit or increase its action except by increasing the dose, and then only very slightly; the anaesthesia produced was found to be more transient, and it was generally necessary to employ almost double the dose of stovaine to produce equally long anaesthesia. During the injection and for the first few minutes afterwards the patient's head and the cervical part of the cord must be kept raised. The stovaine became fixed in about three to five minutes, and after this time he had found it impossible to increase the height of the anaesthesia. In a few minutes the patient was allowed to lie quite flat, and it was found that in this position a fall in blood pressure had been much less common, and there had been no cases in which stovaine had risen to a dangerous level.

The disadvantage of the conscious patient was overcome by the addition of twilight sleep or a little general anaesthetic. For severe operations he usually produced anaesthesia with ether, then injected the stovaine and kept the patient just unconscious by slight whiffs of ether. Out of about 8,000 cases, which included patients of all ages, from infants of a few hours to patients of eighty years, he had had two deaths. The results obtained in young children were very satisfactory. Infants required a relatively larger dose of stovaine than adults, 2.5 cg. being required for the smallest babies. The complications met with had been three in number:

1. Interference with the respiration owing to stovaine reaching too high a level had been very rare, and usually occurred in children or in patients who, for some reason, could not be got into a proper position before injection. Usually a little oxygen relieved the condition.

2. A fall of blood pressure caused the majority of difficulties. It was more common in earlier cases, but had been much less frequent since the adoption of the recumbent position.

3. Vomiting occurring during the operation seemed to depend upon the height of the anaesthesia, being rare if the stovaine affected the lumbar and sacral plexuses only. Measures directed to raising the blood pressure relieved this symptom. Post-anaesthetic vomiting was very rare.

Headache was more common in the conscious patient, and there was less likelihood of it occurring if the patient was moved very carefully after the operation. Out of about 20,000 cases of which he had actual personal knowledge in none of them had there been any permanent paralysis of muscles, abolition of sensation, or any trophic lesion, with the exception of three cases of paralysis of the external rectus muscle of the eye, which lasted about three weeks. Spinal anaesthesia was of great advantage for cases such as the following: Amputations for diabetic gangrene; operations of emergency which could not be done under a local anaesthetic, in patients suffering from acute respiratory diseases; acute or chronic septic conditions with considerable toxaemia; severe operations in young children; all operations associated with shock, such as Wertheim's operation, and various procedures for removal of the rectum; such operations as the radical cure of a large and irreducible hernia in a fat and muscular subject; and prostatectomy. Spinal anaesthesia should never be administered to patients who were likely to be affected seriously by a fall in blood pressure. It protected patients from the onset of shock due to severe and prolonged surgical procedures, but should never be administered to patients who were suffering from shock at the time. It might be useful in mitral disease with pulmonary congestion, but should never be used in aortic disease.

Mr. P. LOCKHART-MUMMERY said that spinal anaesthesia protected patients from pain but not from fear. Inhalation anaesthesia protected from fear but not from afferent impulses reaching the brain from the site of operation. Fear affected the patient as much as pain in producing a lowered blood pressure, therefore it was advisable to use both forms of anaesthesia. The great advantage of spinal anaesthesia was that it did not produce vomiting, so that the patient could be fed until just before the operation, and food could be given immediately afterwards. This made a marked difference in the condition of the patient and the results of operation. He had reduced his mortality from excision of rectum to about 5 per cent. in the last five years. Under spinal anaesthesia the

patient was at the mercy of gravity, and must be kept head downwards.

Mr. P. P. COLE said that, with regard to prevention of shock, the posture and the maintenance of the same position after the operation were both very important. The elimination of vomiting by spinal anaesthesia was necessary where there was strain on the stitches. It was invaluable in prostatectomy and for all urethral work. With it he had never found an impassable stricture. It was also useful in emergency operations in acute abdominal conditions where the surgeon was single-handed.

Mr. ROBERT DONNELLAN preferred the saline form because the operation could be begun at once, and pallor, sweating, shock, and collapse were less than with the glucose solution. Nervous patients suffered more from shock, sweating, etc., than others. He had had a certain number of cases of retention of urine due to atony of the bladder, which required catheterization for some days.

Mr. H. M. PAGE preferred the saline solution. He had seen no vaso-dilatation, shock, collapse, etc., if the patient were in the Trendelenburg position.

Dr. F. E. SHIPWAY said that the fall of blood pressure depended less on the type of solution used than on the paralysis of a large portion of the musculature.

Dr. J. BLOMFIELD thought that Crile had underrated the power of general anaesthesia in preventing shock. It was difficult to produce shock in anaesthetized animals, Spinal anaesthesia was of most value combined with general anaesthesia.

Mr. ROOD, in reply, said that a fall of blood pressure superimposed on shock was dangerous. If the patient were in such a condition it was unsafe to give an anaesthetic which cut out the splanchnics. He had never seen a case of continuous retention of urine.

Reviews.

TRAINING AND REWARDS OF THE PHYSICIAN.

THE small volume recently published by Dr. R. C. CABOT under the title of *Training and Rewards of the Physician*[1] deals with a subject which possesses a personal interest for every member of the medical profession. Dr. Cabot evidently believes that the doctor is born rather than made, though he admits that "training, *especially the trainer*, counts for something." Post graduation instruction, which is the most valuable of all teaching in that it is given to men whose previous education enables them to appreciate its worth, and whose ambition to add to their store of knowledge prompts them to seek it, is, according to the author, better provided in America than elsewhere. But his enthusiasm for the institutions of his own country carries him too far when it betrays him into saying that "the majority of Americans who have gone to Europe in recent years for general medical improvement have, I think, wasted their time."

It is interesting to learn that of 132 practitioners who responded to the question, "What, if anything, was lacking in your medical course to fit you for your particular work?" no fewer than fifty-eight acknowledged their greatest deficiency to consist in an inadequate knowledge of pharmacology and therapeutics. It would seem that in America, as in England, there is urgent need for some revision of practical tuition in this important subject.

In discussing the training of the physician, apart altogether from his educational accomplishments, many arts not taught in medical schools are referred to in this small volume as necessary assets for the successful practitioner: he must know how to deal with people; he must learn "to touch, to reach, to control his patients"; he must select "good talking points that are worth memorizing and using again and again"; he must "avoid antagonizing his patient whenever this is possible without dishonourable submission"; he must encourage the sick man to "face the very worst that can happen"; and so on. All this means surely, when boiled down, a dissertation on the necessity for tact as a fundamental part of the equipment of the successful man whether he be a doctor or a merchant. But the psychology of tact is not to be found in books, and this brings us back to the belief enunciated in the earlier pages of this book, that the doctor who proves himself suited to his job is, like other successful men, born, not made. Tact, sympathy, patience, and self-denial must be part of his make up, else all the acquisition of scientific knowledge, bedside mannerisms, and opportunism will prove so many Dead Sea apples.

Dr. Cabot enumerates many reasons for failure in practice—men who fail "do not keep up with medical progress"; they drop out by reason of bad habits, especially alcoholism and morphinism; "they chose the wrong place to settle in"; to them "the whole work of professional life is against the grain"; they have indecision as a fault of their character; they cannot adapt themselves to their surroundings; "cannot get on with their fellow-practitioners, and are always in hot water over some trifle." But all these reasons for failure are personal and cannot be regarded as more than incidental in the progress of professional success. To each man possessed of tact and common sense they are difficulties by the way which arise only to be overcome.

Among the factors of success Dr. Cabot enumerates "good training, good health, fitting temperament, right choice of his field of practice," and so forth. He also classifies as elements in prosperity, devotion to duty, a "gift of the gab," the assimilation and promulgation of new ideas, and resourcefulness. He believes in "group medicine, or the effort of doctors and others to work in turns, with proper subdivision of labour and specialization of function, such as are characteristic of other departments of industry." Most of the personal characteristics referred to are elemental conditions of success in any walk of life, and have no special bearing on the practice of medicine. The value of "group medicine" in civilian practice is at present *sub judice*, and the possible risk it connotes of curtailing the freedom of action of the general practitioner—who is, after all, the bedrock of the profession—causes to some observers a sense of uneasiness and doubt as to its wisdom.

As regards the rewards which may be expected to accrue from professional work, Dr. Cabot says truly that few doctors have ever grown rich from their medical fees, and, in his opinion, incomes are likely to be smaller rather than larger in America, where the average man, he says, is fond of bargains in any department of his existence, and forever hopes to get "a good article for his money." But if a large income cannot be the doctor's reward, he reaps some recompense from the gratitude of his patients, from the consolation of public approval for work conscientiously and laboriously accomplished, and from the personal sense of satisfaction that, in however small a degree, a trifle has been achieved from one's life work towards lessening the sum total of human misery and suffering.

The rewards of medicine are greater than we who belong to the profession are willing to admit, and they are worth working for even if they bring very seldom either fame or fortune. Dr. McLure, the hero of Ian MacLaren's wonderful Scottish story, epitomized these rewards in the record of a lonely Highland practice where a long life of unselfish and arduous toil assured for him in the end neither worldly success nor posthumous fame, but the greatest of all epitaphs, "Well done, good and faithful servant."

[1] *Training and Rewards of the Physician.* By R. C. Cabot, M.D. Philadelphia and London: J. B. Lippincott Co. 1918. (Cr. 8vo, pp. 153; illustrated. 5s. net.)

FORENSIC PSYCHIATRY.

THE total failure of legal methods—namely, the investigation and punishment of the offence—has led to a much broader conception of criminology and to an intensive study of the individual delinquent from all points of view, but especially from that of psychopathology; it is the criminal not the crime that must be dealt with. This is the motif of Dr. GLUECK'S *Studies in Forensic Psychiatry*,[2] the second of the criminal science monographs which, following the lines of Kraepelin's school, give an analysis of criminal types by clinical psychopathological investigation of cases in the criminal department of the United States Government Hospital for the Insane. In the first chapter, on the psychogenesis of prison psychoses, the effect of the shock of conviction and

[2] *Studies in Forensic Psychiatry.* By Bernard Glueck, M.D. Criminal Science Monograph No. 2. London: William Heinemann. (Pp. 269. 10s. 6d.)

of the environment of prison life is considered, and the hysterical or degenerative nature of Ganser's symptom-complex or "twilight state" is discussed with illustrative examples. In the history of the prison psychoses are reflected the various views that in their day have dominated psychiatry. At the present time one school regards the prison psychoses as identical with those in the outside world, at most modified by the surroundings, whereas the other maintains that they are the product of predisposition and external factors.

The acute psychosis following a crime and arrest, to the lay mind obviously suggesting malingering, is comparable to the amnesia of an examination candidate who may forget his own name. The psychosis is the result of the shock following arrest, and is therefore, from a legal point of view, no excuse for the crime, but its occurrence is evidence of a degenerate personality. The prognosis of the acute prison psychoses is good and removal to a hospital usually effects a cure. A distinction is drawn between these acute psychoses in prisoners awaiting trial and often for the first time in conflict with the law, and the mental disorders of convicted and generally habitual criminals. The incorrigible criminal when free from psychoses does not come within the province of an insane hospital. He should not be sent to a penal institution as he exerts an evil influence on the as yet uncorrupted criminals, but, as he belongs to a distinct and undesirable species of humanity, should be segregated into a specially designed colony under the supervision of a psychopathic physician. A chapter is devoted to the litigious form of paranoia, a specially important subject from the forensic point of view. Malingering, discussed in the next chapter, is regarded as a form of mental reaction, manifested chiefly if not exclusively by those of an inferior mental make-up; like lying and deceit generally, it is not always a conscious act for a definite purpose, but not infrequently it is determined by instinctive biological forces over which the individual has little or no control. The last of these interesting collected papers is an analysis of a case of kleptomania. Owing to unavoidable circumstances this review is considerably delayed, but it is none the less sincerely appreciative.

NOTES ON BOOKS.

DR. MITCHELL BRUCE'S small handbook on *Materia Medica and Therapeutics*[3] has for thirty-four years enjoyed great popularity amongst medical students and practitioners, and it would be difficult to find a better concise introduction to the rational use of drugs in the treatment of disease. The eleventh edition has now appeared. During the process of revision important changes were made in the *British Pharmacopoeia* owing to the increasing scarcity and cost of many drugs, and these have been incorporated within the text, while the substitute preparations of the War Emergency Formulary have also been included. Further, a new section on prescribing as affected by the war has been added to the introduction. Beyond these war-time modifications the manual has been revised throughout in the light of the most recent advances in pharmacology and therapeutics, and the descriptions of certain non-medicinal measures—such, for example, as electrical treatment, massage, and exercises—have been expanded somewhat. The subjects of antiseptics and surgical dressings, which have been so largely developed during the past four years, receive special attention throughout the book.

In the JOURNAL of February 24th, 1917, we reviewed at length *Le traitement des plaies infectées*, by Dr. A. CARREL and Dr. G. DEHELLY, and a few months later we welcomed the appearance of a good translation of this work by Captain HERBERT CHILD, under the title of *The Treatment of Infected Wounds*.[4] The second edition of the English version contains an account of certain technical improvements which have been effected in the method.

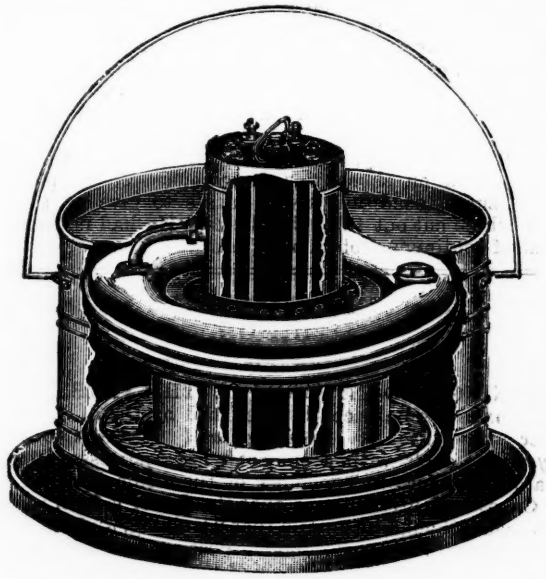
[3] *Materia Medica and Therapeutics: An Introduction to the Rational Treatment of Disease.* By J. Mitchell Bruce, M.A., LL.D. (Hon.), M.D., F.R.C.P., and W. J. Dilling, M.B., Ch.B., Captain R.A.M.C.(temp.). Eleventh edition, revised to correspond with the war amendments of July, 1917, and March, 1918. London: Cassell and Co., Limited. 1918. (Fcap. 8vo, pp. 688. 9s. net.)

[4] *The Treatment of Infected Wounds.* By A. Carrel and G. Dehelly. Translation by H. Child, temporary Captain R.A.M.C., with an introduction by Sir A. Bowlby, K.C.M.G., K.C.V.O. Second edition. London: Baillière, Tindall, and Cox. 1918. (Cr. 8vo, pp. 275; 114 figures. 6s.)

MEDICAL AND SURGICAL APPLIANCES.

Gabriel's Improved Steam Sprayer.

MESSRS. GABRIEL AND CO., brassfounders, of A B Row, Birmingham, have for some time been manufacturing and supplying the Admiralty and Ministry of Munitions with a steam sprayer for charging the atmosphere of a room with an antiseptic, and now, at the cessation of hostilities, offer this for general use in hospitals, public health departments, and also domestically. It will be seen from the illustration that the apparatus consists of a portable stand of wrought steel, at the bottom of which is attached a circular metal tray. In this is placed a circular copper burner containing asbestos wool, and arranged to burn methylated spirits. Suspended over this burner is a round copper boiler or jacket, in which is placed the water to generate the steam. In the centre of this water vessel is placed a circular copper boiler, in which is put the liquid to be sprayed. This was made in two halves bolted together, which can readily be taken to pieces for cleaning, but it is intended in future to make it in one piece of spun copper with a screwed cast top for carrying spraying tubes. The top will be readily unscrewed, leaving the



cylinder open for cleansing. The boiler is connected to the water vessel by means of a small bent brass tube. Attached to the top of this boiler and extending to the bottom are placed four copper tubes, and at the top of each is placed a valve with an adjustable cover, to regulate the pressure. This valve has four very fine holes drilled in, and a single hole drilled in the centre of the cap through which the steam and liquid are passed, the fitting being provided with a suitable safety valve. The working of the sprayer is as follows: When the steam is generated in the outer boiler it passes into the top centre vessel through the bent tube into the valve chamber through the four small holes, and draws up the fluid through the four copper tubes into the top valve, where it mixes with the steam, and then passes out through the small hole in the top cap to the atmosphere in the form of a very fine spray. The use of a spray of the original type in the treatment of carrier cases, especially of cerebro-spinal fever, has been on several occasions described in these columns by Colonel M. H. Gordon, of the Cerebro-spinal Fever Laboratory, and others. It has, in fact, been widely used by the army medical authorities in the prevention of diseases due to organisms in the nasopharynx and respiratory passages. It has been found of value in the prevention of diphtheria, purulent bronchitis, and measles. The apparatus is made in three sizes, the largest for hospitals, the medium size for public health authorities, and the small size for domestic use. The sprayer, it is believed, will be of use in school clinics and tuberculosis dispensaries. For these purposes formalin is recommended, but the selection of the antiseptic will, of course, be determined by medical advice in each case.

DR. VINCENT WANOSTROCHT of Market Drayton, who had retired from practice, disposed in his will of a ring containing a lock of Louis XVI's hair given by that monarch to one of his ancestors.

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SATURDAY, DECEMBER 21ST, 1918.

REPRESENTATION.

THE widespread interest a general election must always arouse is increased on this occasion by the extreme uncertainty as to the result. The dislocation of parties and the enormous increase in the number of the electors have dumbfounded the prophets. Even if it be assumed that in constituencies in which there is no woman candidate the women voters, when it comes to the point of voting, will be influenced by much the same considerations as men, it is still, in the unprecedented circumstances of the time, impossible to foresee how the new House of Commons will be constituted.

This uncertainty and the great changes made by the last Franchise Act may dispose some who have not considered the matter before to investigate the machinery of representative government in this country. The first fact that may give them pause is that at more than one general election a majority of the members of the House of Commons has been elected by a minority of the electors. This will prove to any man of scientific bent that the machinery is faulty, and his curiosity will be stimulated by finding that in the universities, with two or more members (the system is not applicable to a single member constituency) the election is to be by the system of proportional representation known as the single transferable vote.

The aim of proportional representation is to secure to minorities their rightful share of representation. The details of the manner in which the method is to be applied in the university constituencies are set out in a schedule to the Act, but those who desire better acquaintance with the arguments upon which the claim for proportional representation rests may be advised to consult a small book by Mr. Fischer Williams, entitled *The Reform of Political Representation*.[1] Though the reform with which his book is concerned is proportional representation, and chiefly that form of it used in the new Act (the single transferable vote), it contains in an introductory chapter a discussion of general principles which, coming from one whose eminence as a constitutional lawyer is well known to members of the Association, seems particularly worthy of their attention.

He combats the contention, popular with some who label themselves advanced political thinkers, that the machinery of representation is unimportant. As the Prime Minister said the other day, there are reactionaries in all parties. The direct importance of the machinery becomes obvious when it is found that, as has been said, the majority of members at a general election has been returned by a minority of electors, and, further, that in a constituency or series of constituencies in the same area the difference between the majority and the minority may be so small that nearly half the electors are unrepresented. It is not a party question—the misfortune has happened to all parties; it is really a question of the application of simple scientific principles to attain an end all profess to desire. "Representative machinery," Mr. Fischer Williams writes, "is not merely a method of getting things done more or less efficiently. It reacts on the individual citizen. It may depress the individual by treating him as an insignificant unit. . . . It may elevate and stimulate his interests by giving him a real choice as to the person who is to represent him. . . . And as the machinery produces one or other of these effects, so must it be judged as an efficient instrument of popular government. . . . It is not enough that citizens should consent; they should also co-operate, if we are to have a true democracy. The co-operation of all citizens will not only improve government; it will also enable the community to realize its own capacities"; and, finally, "the organ of discussion must be fully representative of all considerable portions of the population whose affairs it is charged to discuss."

These observations must have interest for members of the British Medical Association who desire to see it fully attain the position to which it aspires. The method of proportional representation is sanctioned by the constitution of the Association, and has been used by the Metropolitan Counties Branch in the election of its representatives to the Central Council. It is also used in connexion with the Insurance Acts Committee for the election of six members by the Annual Representative Meeting, and of eighteen direct representatives by Local Medical and Panel Committees. It is also used in the election of eight direct representatives of such committees on the Scottish Insurance Acts Subcommittee. As the method is not applicable to single-member constituencies, and as the constituencies of the British Medical Association (the Divisions) elect each, with relatively few exceptions, one member only of the Representative Body, the proportional method cannot be employed to ensure representation of minorities. The British Medical Association shares this defect with the House of Commons, but the architects of the present constitution introduced a peculiar limitation: they held that a member ought not to be allowed to vote in the election of his representative unless he attended the meeting at which the election was made, and heard the discussion which it was assumed would then take place. They objected to what they termed the "uninstructed vote." The constitution of the Association does, in fact, permit a Division to elect its representative and other officers by voting papers sent through the post, but apparently few Divisions have made use of this method. When the method of election by voting in person is pursued it has not infrequently happened that a meeting attended by half a dozen members, or even fewer, has elected the representative, who then speaks and votes for all the members. Further, as the Association has borrowed from trade unionism the system of the card vote, the representative can dispose of all the votes of the Division when that method of voting is resorted to.

It is unfortunately true that the Association numbers among its members only about half of the medical practitioners of the United Kingdom. The reason for failing to join the Association sometimes given by those who remain outside it is that they cannot consent to belong to an association in the determination of the policy of which they can take no active share. The reason perhaps savours of an excuse, but, as has been shown, it has a certain, not inconsiderable, measure of justification. The prime object of the Association is to embrace and speak for the whole British medical profession, and any stumbling stone or rock of offence should be removed.

That the Council of the British Medical Association recognizes that the feeling to which we have referred

[1] London: John Murray. 1918. (Demy 8vo, pp. 140. 2s. 6d. net.)

exists is shown by its action at its last meeting, when the Organization Committee reported that there existed to some extent among members, and more especially among non-members, an impression that individual members of the Association have practically no voice in the conduct of its affairs, especially when, as is often the case at present, the individual is unable to attend a Division meeting and cannot record his or her vote by post. The Committee advised the Council to point out that it was within the power of constituencies to elect their representatives by postal vote. While agreeing to this recommendation, the Council instructed the Organization Committee to report on the possibility of the extension of the use of the postal vote in the administration of the affairs of the Association.

THE CULT OF THE EXPERT.

THE word "expert" has become very familiar to the English-speaking public. Mr. Lloyd George has expressed his desire for expert criticism, and has even hinted that he will resent any criticism which is not expert, while the medical expert has almost replaced our old friend the "well known Harley Street physician" in the columns of the daily press. The manufacture of experts used to be one of the staple industries of Germany; Professor Huber contrasted English and German university systems to the disadvantage of the former in this particular, his words being: "English scholars live too much in and for the world, so that it is hardly possible for them to develop that species of almost monomaniacal love of the subject of their investigations." It is interesting to consider whether the production of medical experts is an end to be desired, since, as Germany proved, it can certainly be achieved.

Professor Huber's expert is, of course, a specialist, and the usual argument runs that, owing to the complexity of science in general, and of medical science in particular, specialism is a necessary condition of progress, because no man can keep abreast of the advances made in any but a small subdivision of knowledge. Hence, it is urged, the old-fashioned and largely English conception of the scholar and gentleman—the traditional ideal of, for instance, the London College of Physicians—however gracious and humane, must now give place to something more efficient. The old ideal was, and still is, attractive in the abstract, though it may be open to the criticism that was passed on the ancien régime of France—that it would be a fine way of life if there were only lords in the world and lords had nothing to do but to hunt. What we have to decide is an essentially utilitarian question.

In the report of the Medical Research Committee for 1917–18 the following passage occurs: "It has been specially noticeable during the past year that physiology, the science of the healthy living organism and of its reactions to disturbance, has been more and more brought into practical service by special needs revealed by the war. . . . It has often been pointed out that in England the work of the physiologist has been too much divorced from practical medicine, and that the British school of physiology, which by the admission of other nations stands perhaps second to none elsewhere, has not been brought in this country into due contribution to the work of the physician and surgeon. No doubt this is true, and mainly, perhaps, because of the defects in our system of medical education which have allowed the physiologist to remain too much in academic retreat and the clinician too far from the laboratory and its methods. . . . The Committee believe that physiology will be found to have gained permanently itself while giving aid in these pressing problems of the moment. More than this, they hope that the active co-operation which has been established in more than one direction between the physiologist and the medical and surgical clinician during this time of war may long endure and bring lasting benefit both to the general cause of medical research and, by inevitable reflection, to that of medical education."[1] Now these conclusions, which will be endorsed by any one who has been intimately concerned with wartime scientific work, by no means support the contention that what we chiefly need is a rapid output of specialists; on the contrary, they suggest that we have not had available a sufficient number of generally cultivated men. Much can be done, as the Committee elsewhere points out, to remedy present evils by promoting frequent conferences between specialist investigators dealing with various aspects of a problem. But conditions of space and time set limits to the availability of this expedient.

It seems to us arguable that the trend of medical education has already encouraged the expert to an undesirable extent. It was doubtless absurd presumption in the successful London practitioner of a past age to suppose that the possession of a large clientèle entitled him to give scientific law to the medical world, but we question whether proficiency in the study of colloids, for instance, or skill in the manipulation of correlation coefficients, really creates a better title. The difficulty is to steer between the Scylla of an intolerant reliance upon the skill attained through exclusive devotion to a narrow range of intellectual interests, and the Charybdis of a slovenly omniscience. What we have to produce is, as Sir George Newman has said, a man "with a forward-looking mind, able to participate in the growth and development of medical science, trained in the scientific method and inspired by the scientific spirit—in other words, a man of accurate observation, of ability in experimentation, and of sound judgement and interpretation."[2]

There is a further evil associated with the cult of experts which we view with the gravest apprehension. It is the tendency of political adventurers to inculcate upon the public a belief that profound modifications of the public health are immediately practicable, if only a sufficient number of experts are entrusted with public money. Much that has been written on the subjects of tuberculosis and infant mortality by those in authority has been painful reading for the judicious, and we see no signs yet that the tide of rash promises is ebbing. Those who have the ear of the public would do well to preach a sterner and truer gospel. Of the great causes of mortality few, perhaps none, are the mere consequences of extrinsic phenomena controllable by experts. The environment of the wealthy country squires of the early eighteenth century—the Westerns and Osbaldistones—was, as compared with that of our urban slum dwellers, as light to darkness; yet we have no reason to think the average expectation of life in country squires of that age was higher than that of the modern poor, and the explanation usually put forward is the hard drinking habit of our ancestors. Whether the specific explanation be true or false, the general truth of the doctrine it illustrates is beyond dispute: men's habits kill them. Infant mortality was as high in parts of Bavaria,

[1] Fourth Annual Report of the Medical Research Committee. Cd. 8981, pp. 6, 7.
[2] Medical Education in England. Cd. 9124. H.M. Stationery Office. 1918. Pp. 16. Price 9d.

which tourists used to visit in search of health and natural beauty, as in the slums of industrial cities; once again a matter of habits. When the slums have vanished, man will hardly fail to replace some of the dangers he has escaped by others which come at his bidding, and Charon's load may not be much the lighter. The slums must go, as must all other environmental conditions which make it impossible for man to live a healthy life; but the utmost these reforms can achieve is to make a healthy life possible.

In the encouragement of disinterested scientific research, in the raising of the standard of both professional and general education, we shall gradually extend the scope of knowledge and the means whereby that knowledge may be translated into practice. Only in this way can we hope for improvement of the public health. The politician's expert is but a reincarnation of the witch doctor, and must in the long run produce popular discontent, and discredit real science.

THE CARE OF THE CONSUMPTIVE SOLDIER.

LITTLE by little the need for a combined effort in the interests of the home-coming soldiers and sailors who have developed tuberculosis while on active service is being realized. In a circular addressed by the Local Government Board to county and borough councils, and dated December 4th, the welcome announcement is made that by arrangement with the Ministry of Pensions a system of visitation of all men discharged after treatment for tuberculosis is to be established, the cost of such visitation being guaranteed by the local War Pensions Committees. Provision has also been made for the supply of extra nourishment in specially certified cases. The tuberculosis authority of the district or area into which the discharged man is returning will be notified, and visits will then be made under the general supervision of the local tuberculosis officer. The reports which the visitors may make will be brought to the notice of the medical officer of health, and to some extent will serve to correct the defects of the present methods of notification. It is worthy of note that power is to be given to local War Pensions Committees to pay the expenses of the removal of patients who may be living in unhealthy surroundings, and that it will be the duty of tuberculosis officers to report as to earning capacity in respect of pensions, a fee being payable for such work. This is a step in the right direction, but it is a preliminary step only. A far larger undertaking, which sooner or later will have to be faced, lies before the county and borough councils. It is on all hands agreed that the establishment of farm and industrial colonies, where sufferers in every stage of the disease can be properly housed and profitably employed, is urgently needed. The idea is no longer the utopian dream that some gloomy critics have ridiculed. It has been translated into practical being, and one of the most successful of such colonies is to be seen at Papworth Hall, near Cambridge. Under the control of Dr. Varrier-Jones hygienic life has been made attractive to ex-soldiers, who find themselves in pleasant social surroundings and healthy environment with steady and not too laborious work. In the November number of *Reveille*, Dr. Varrier-Jones has put forward a strong plea for the wider application of this successful method of dealing with the problem. The tuberculosis dispensary and the sanatorium are as needful as ever for the detection of the disease, for the education of the patient, and for the preliminary treatment, but the colony system gives promise of that completion of cure or arrest of the malady which has hitherto been lacking. Those who have contracted or developed tuberculosis in the service of their country should be cared for by the State. It is a State duty and not an act of charity to provide them with the best known means of recovering their health.

THE GERMANS AND THE SCIENTIFIC WORKERS OF LILLE.

DR. ALBERT CALMETTE, Director of the Pasteur Institute of Lille, in his own name and on behalf of MM. G. Laguesse, H. Parenty, Duret, and Aimé Witz, representing virtually all the scientific workers detained in that city during the German occupation, has addressed to the Académie de Médecine a protest on the ill treatment which they suffered at the hands of the invaders. Without the slightest regard for their scientific work or their families they were on several occasions subjected to domiciliary visits of the most insulting nature. Even their scientific apparatus and instruments were not respected, and the members of the faculty of medicine were expelled from their laboratories. Among the "hostages" deported to Poland was Professor Buisine, Director of the Institute of Chemistry, aged 62, and suffering from long-standing intermittent action of the heart and stricture of the oesophagus. His wife called the attention of the German surgeon-major, Dr. Krug, who was examining the prisoners, to her husband's condition, and received the brutal reply, "Madame, that is not contagious for the German army!" M. Calmette speaks of the responsibility of the German people for the misdeeds of its army, and says that those who, like himself, have witnessed the eagerness, even zeal, with which men who are not professional soldiers—for instance, doctors—did the most hateful things without a word of excuse, regret, or pity, are compelled to recognize that as a general rule, to which there are but too rare exceptions, the German heart is inaccessible to generous, or even simply human, feeling. Henceforth the German people, in spite of its laborious intellectual activity, can only excite disgust and horror at the crimes of which it has been guilty. For this reason M. Calmette and his colleagues state that they will not in future collaborate in any German publication or take part in any scientific meeting or international congress attended by any German workers who have not first expressed by a public declaration their disapproval of the antisocial acts of their Government in the war. They call upon their colleagues of the Institute of France, the Academy of Medicine and the Academy of Agriculture to join them in this declaration and to invite the scientific societies of all civilized nations to associate themselves with their action. The resolution of the Lille savants was unanimously adopted by the Academy. At the meeting of the Paris Académie des Sciences on November 4th M. Calmette made his first appearance since the liberation of the town. The president congratulated him and his colleagues on their courage in continuing their scientific work throughout the German occupation. On November 5th M. Calmette also received the felicitations of the Académie de Médecine.

BOTULISM.

DR. DICKSON'S monograph on botulism[1] appears rather appropriately this year, as the first cases of epidemic stupor in the early spring were regarded as botulism. The investigation recorded in this, the eighth, monograph of the Rockefeller Institute for Medical Research was commenced nearly five years ago, when twelve persons were poisoned by a salad made of string beans in a students' club-house at the Leland Stanford Junior University. In the past botulism has generally been regarded as due to meat, and especially sausage, poisoning, but it has now been shown not to be essentially a meat poison and to occur in canned vegetables and fruit. How vegetables become contaminated with *Bacillus botulinus* is not definitely known, but it is possible that the bacillus is normally present in the intestinal

[1] *Botulism: A Clinical and Experimental Study.* By Ernest C. Dickson, M.D. Monographs of the Rockefeller Institute for Medical Research, No. 8. 1918. (Pp. 117; 10 plates. 1 dol.)

contents of pigs, and becomes attached to vegetables when pig manure is used as a fertilizer. Experiments show that the bacillus will grow and form its toxin in a medium consisting of string beans or other vegetables without the addition of any animal protein, that this occurs in a medium giving an acid reaction with phenolphthalein, and that animals dying from the effects of the toxin show a peculiar form of thrombosis, thus confirming what Ophüls observed for the first time in the fatal case at Stanford University. The toxin causes wide dilatation of the blood vessels, thrombosis, and multiple haemorrhages. How the toxin produces the characteristic nervous symptoms is not known, and the evidence available is against the view that the clinical manifestations depend upon the lesions described in the nerve cells by Marinesco or that they are secondary to thrombosis. The toxin is destroyed by boiling and its virulence varies considerably. It now appears that botulism is endemic in the United States and comparatively common in the Pacific Coast States. It is therefore important that special care should be taken with regard to boiling vegetables before home canning. The most common diseases with which botulism may be confused are cerebrospinal syphilis, acute poliomyelitis, and hysteria. Several forms of poisoning—for example, by belladonna, fish roe, and decomposing fish—may imitate botulism. The mortality in the collected American cases was 64 per cent., and Dickson says that there are no available records of the curative use of antitoxic serum, except in laboratory experiments, but quite recently rapid improvement has been reported after intramuscular injection of 20 to 25 c.cm. of the serum by Nonnenbruch and others. The so-called limber neck of hens is often due to botulism, and the appearance of this in a hen that has eaten kitchen refuse should be regarded as an indication for injection of antitoxic serum into all persons who have eaten the suspected food.

OCULAR CONDITIONS AFFECTING THE EFFICIENCY OF THE AVIATOR.

COLONEL W. H. WILMER has carried out in America some investigations in reference to the effect of rarefied atmospheric conditions upon the sight of aviators. When the supply of oxygen becomes limited certain well known compensatory changes take place. The demand of the tissues for more oxygen is met in good subjects by an increase in the depth of respiration, by the dilatation of peripheral vessels, and by more rapid action of the heart. Increased frequency of respiration and a rise in blood pressure are clumsy attempts at adaptation, and lead to a breakdown. The changes in the blood itself consist of concentration and an actual increase in the red blood corpuscles. The investigations were carried out with two forms of apparatus. One was a large low pressure chamber from which the air was exhausted by means of an electrically driven pump, the oxygen tension and the barometric pressure being simultaneously lowered, while the amount of carbon dioxide increase was negligible owing to good ventilation. The Henderson rebreathing apparatus was used also; in it the subject breathes up his own exhaled oxygen from a tank, the excess of carbonic acid being absorbed by sodium hydrate. Tests made by these two different forms of apparatus agreed closely, so that the conclusion was that the physiological changes noted are caused by lack of oxygen alone, and not by lowered atmospheric pressure. As many pilots complain that at high altitudes they cannot see the registering instruments, this blurring of vision having led to accidents, Wilmer tested the various functions of the eye under lowered oxygen pressure. The visual standard required by the United States is much higher than that demanded by other nations. The fact that the functions of the eyes fall off under reduced oxygen pressure emphasizes the necessity for this careful selection. The tests have shown that there is not any great fall in acuity under reduced oxygen, but there may be a very considerable deterioration in the muscular functions. Hypermetropic aviators are liable to failure of the ciliary muscle causing blurring of vision, whereas the slightly myopic may experience slight improvement for the same reason. Colour vision is not affected at high altitudes. On the other hand, the investigation showed that the field of vision might become contracted, and it appears that the retinal periphery is more sensitive to want of oxygen than the macular region. At 20,000 feet there is a marked contraction of the fields for form and colour. Wilmer concludes that candidates for the flying corps should have good vision, and be free from any marked errors of refraction and muscle balance. Hyperphoria is especially excluded, because under reduced oxygen pressure it is liable to be accentuated. The paper, which is not as detailed as it might be considering the immense importance of the subject, is to be found in the *Archives of Ophthalmology* for September, 1918.

PUBLIC HEALTH MEASURES IN INFLUENZA.

THE opinion that no public health measures can prevent the spread of influenza is shared, among others, by the medical members of the Board of Health (Sundhetskommission) of Christiania. This confession of impotence is apt to provoke exasperated criticism at a time of panic, and in Norway the refusal of the medical advisers to the Sundhetskommission to shut down schools, theatres, and the like has started an agitation in the daily press for the summary dismissal of such unsatisfying public servants. Professor A. Holst,[1] a member of the Sundhetskommission, defends his attitude by a comparison of the morbidity and mortality returns from influenza in towns which have or have not adopted the wholesale shutting down of public institutions. In Christiania itself, where in July of this year schools, theatres, and some cinemas were closed, the notifications of influenza were, in round figures, 2,100 in the first week, 6,100 in the second week, and 5,000 in the third week. In the autumn epidemic, while the Christiania institutions remained open, most of the Copenhagen institutions, including the university, were closed, the view being held by the authorities of Copenhagen that by this measure infection might at least be delayed in so many cases that pressure on hospital accommodation would be relieved. But the death-rate from influenza in the period October 20th to November 9th was somewhat lower in Christiania than in Copenhagen. Again, in Gothenburg, with a population of 197,000, where public meetings, including auctions in private houses, were prohibited this autumn, though not on the advice of its Board of Health, the deaths from influenza numbered 476. During the same period the deaths from influenza in Christiania, with a population of about 260,000, were 325. Professor Holst appears to consider that every town-dweller who is susceptible must sooner or later contract influenza whatever the public health authorities may do; and that the more schools and public meetings are banned and the general life of the community dislocated the greater will be unemployment and depression. And this without any corresponding benefit.

THE ARMY VETERINARY CORPS.

MAJOR-GENERAL SIR FREDERICK SMITH, F.R.C.V.S., in a communication to the Royal Society of Arts on December 11th, described the work of the British Army Veterinary Corps at the fronts. He said that 1,300 officers and 27,000 men, exclusive of 6,000 coloured troops, were employed in the various theatres of war looking after the health of army animals, especially the horse, though the mule bulked largely, and oxen and camels in the eastern campaigns. Every division of the army possessed a mobile veterinary section, the function of which was to combine a collecting station for the sick with a field veterinary

[1] *Tidens Tegn*, November 16th.

hospital. From this section the sick were handed over to the veterinary evacuating station, where they received more thorough and deliberate inspection. The evacuating station then entrained its sick for the base, where the hospital group consisted of a reception, a general, and a mange hospital, with a convalescent dépôt for cases of debility needing time to recover. Sir Frederick Smith, with the help of the cinematograph, described the routine treatment of mange, which chiefly consisted of immersion in a swimming bath containing parasiticide solution. Side by side with improved methods of treatment, during the whole campaign inquiries had been going on into the nature of diseases, their prevention, diagnosis, and treatment. Bacteriological laboratories were established in every theatre, and the whole of the mallein employed was made in an army veterinary laboratory, which sent out hundreds of thousands of doses each year. The Duke of Portland, who occupied the chair, read a statement from Major-General Moore, D.V.S., to the effect that since the commencement of the war (presumably on the Western front alone) 689,387 horses and mules had been admitted to veterinary hospitals and convalescent horse dépôts for treatment, and of this number 500,604 had been cured and returned to the Remount Department for re-issue to the front. The last figure represented 72 per cent. of admissions, which must be considered most satisfactory, when it was remembered that the admissions included many thousands of battle casualties, and all forms of contagious disease. General Moore added that the animals of the force, on the date the armistice was signed, were freer from contagious disease than at any previous time; and mange, which had proved a scourge in previous campaigns, had now practically ceased to exist.

RELATIVE VALUE OF DOMESTIC FUELS.

THE relative value of various fuels for domestic purposes formed the subject of the first of a series of lectures on fuel economy, delivered recently at University College, London, by Mr. A. H. Barker, B.A., B.Sc. He said that the British thermal unit, the amount of heat required to raise 1 lb. of water 1° F., might be popularly described by stating that 500 such units were equal to a quart kettle of boiling water, and 20,000 to a bath of water at body temperature. The heat units given by a stated quantity of coal or gas varied within wide limits according to the quality of the fuel, but the calorific energy per unit of electricity consumed, though it varied in pressure or voltage, was constant. A gas meter marked the cubic feet irrespectively of the quality of the gas, so that when the gas companies impoverished the gas in heating constituents and at the same time raised its price, they were taking from the consumer at both ends; but to the electric supply companies this double manœuvre, fortunately, was not possible—they could only raise the price. The value of 1 lb. of good coal was 15,000 Board of Trade units; of very poor coal 10,000; of good coke 13,000; and of present-day coke, some of which was scarcely worth calling fuel, 9,000. One cubic foot of rich gas yielded 650 Board of Trade units, and of present-day gas no more than 480. The value of electricity per unit was always 3,410 Board of Trade units, and of 1 lb. of petroleum 18,000 units. If these values were recast in terms of prices it would be found that coal at 47s. a ton (as high as it had ever been in London since the Franco-Prussian war) yielded 56,000 heat units for a penny; gas, at 4s. per 1,000 cubic feet, yielded 10,500 heat units for the same sum, and electricity, at 8d. per unit, only yielded 426. From this point of view coal as a fuel was five times cheaper than gas. It was not, however, the heat used that was so expensive, but the heat wasted, and the responsibility for this must fall not so much upon the householder, as upon the makers of domestic appliances. An open fire, for instance, only yielded 10 to 15 per cent. of really useful heat, and by a simple experiment the waste of gas in boiling a kettle was demonstrated. The kettle contained 4.25 lb. of water, and the gas consumed in raising it from 56.5° to 212° F. was 4.3 cubic feet. This amount of gas represented 2,150 heat units, but the water at boiling point was only equivalent to 691 such units, so that the efficiency of the process was only 32 per cent., and two-thirds of the heat from the gas had been wasted in the air. A good electric kettle, on the other hand, was efficient to approximately 85 per cent. If a coal fire had to be lighted specially to boil the kettle its efficiency would be no more than 1 or 2 per cent.; but if the fire was being used all the time for warming the room it was impossible to estimate how much of the heat might be expended on boiling the kettle, and the efficiency might even be reckoned at 100 per cent. Mr. Barker concluded by giving the heat units yielded by the Coal Controller's equivalents: Coal (one ton) 31,400,000, gas (15,000 c.f.) 7,200,000, electricity (800 units), 2,730,000. These equivalents were framed on the basis of coal destruction, and he thought the figure for electricity much too generous. It was only in electric supply plant of exceptionally good quality that 800 units could be produced for each ton of coal destroyed.

NEOPLASTIC OBSTRUCTION OF THE INFERIOR VENA CAVA.

OCCLUSION of the inferior vena cava by new growth is rare. Among Pheasant's collection of 314 cases of obstruction of the inferior cava there were but 43 due to this cause, and in only one was the inferior cava obstructed the whole way from the iliacs to the right auricle. Jacobson and Goodpasture[1] describe a case remarkable in several respects. A large hypernephroma of the upper pole of the left kidney extended through the renal vein into the inferior cava, which was distended in its whole extent, the right auricle being occupied and the tricuspid valve mechanically interfered with. The orifices of the hepatic veins were obstructed by clot, which, however, did not contain any growth, and there was acute necrosis with haemorrhagic infiltration of the centres of the lobules. The patient, a man aged 63, was admitted with oedema of the feet; rather later the abdominal veins became prominent, and twenty-four hours before death the liver suddenly enlarged and acid intoxication came on. The sudden hepatic enlargement coincident with the onset of acidosis is held to point to acute thrombosis of the hepatic veins. Other noticeable points were the absence of haematuria and the late appearance of definite signs of obstruction of the inferior vena cava, although that vessel was occluded in its whole length at the necropsy.

GERMAN EXPERIENCES OF WAR NEUROSES.

OF the innumerable papers published on war neuroses in Germany, one by M. U. Hartung[2] possesses the unusual merit of succinctness. In the course of a year he treated 780 cases at Thal, a military sanatorium for such cases. In 162 cases the patients suffered from hysterical paralyses, the lower limbs being twice as often affected as the upper. Atrophy of muscles and stiffness of joints were a common sequel in these cases to the misuse of splints and other appliances; in many instances considerable force was necessary to straighten deformed hands. About 98 per cent. of all the cases were cured by a combination of psychic and mechanical treatment. Tremor occurred in 28 per cent. of all cases, the parts most frequently affected being the head and upper limbs. Fine tremor was harder to cure than coarse, but a cure was ultimately effected in every case. Hysterical convulsions, which were observed in 8 per cent., were easily cured, either by suggestion combined with electricity, or simply by ignoring them. Disturbances of speech occurred in 5 per cent. of all cases and every one was cured. Hearing was affected only in 1 per cent., and in some cases

[1] V. C. Jacobson and E. W. Goodpasture, *Arch. Int. Med.*, Chicago, 1918, xx, 86-95.
[2] *Zeitschrift f. d. ges. Neur. u. Psych.*, vol. xl, Nos. 2-3, 1918.

the deafness had lasted for years. Recovery was effected in every case under a combination of suggestion and local treatment. The restoration of hearing was often instantaneous. Cardiac and respiratory neuroses were found only in 1.5 per cent., and the most common manifestations were tachycardia, dyspnoea, and "heart cramp." The only patient in this category who failed to respond satisfactorily to treatment was also both deaf and imbecile. Neuroses of the digestive system comprised aërophagia, vomiting, "stomach cramp," eructations, and tympanites. They constituted 1.5 per cent. of the total, and all yielded satisfactorily to treatment with the exception of one patient, in whom vomiting proved intractable. The bladder neuroses, found in 1.5 per cent. of the total, consisted of incontinence in all but one case in which there was sphincter spasm; all were cured. Neurasthenia, in the strictest sense of the word, was present in 20 per cent. Hartung concludes that the principle of special hospitals for war neuroses has been fully justified, and insists that the atmosphere of military discipline in such institutions is of inestimable value in securing a high rate of recovery.

THE usual half-yearly indexes to the JOURNAL and to the SUPPLEMENT are being prepared and will be printed. They will, however, not be issued with all copies of the JOURNAL. Any member or subscriber who desires to have one or both of the indexes can obtain a copy of what he wants, post free, by sending a post-card notifying his desire to the Acting Financial Secretary and Business Manager, British Medical Association, 429, Strand, W.C.2. Such copies will be dispatched shortly after the middle of January.

THE MILK SUPPLY.

THE third interim report of the Government's Advisory Committee on the Production and Distribution of Milk[1] has been issued this week. The Committee was set up in April, 1917; its chairman is Major Waldorf Astor, M.P., and the medical members are Sir George Newman, Chief Medical Officer of the Board of Education; Dr. A. W. J. MacFadden, of the Local Government Board; and Major G. R. Leighton, of the Scottish Local Government Board. Its policy has been, first, to try to maintain as far as possible the volume of milk previously produced; secondly, to distribute it fairly and according to the needs of the community; and thirdly, to consider what steps are necessary to develop and increase the dairy industry after the war. The need for such development is shown by the following facts: The total number of cows has not increased proportionately with the growth of the population since 1871, while the value of dairy produce imported into the United Kingdom has increased almost fourfold in the same period, and the proportion of cows to the human population and of the area of cultivated land is lower than in any other European country for which the figures are known. The Committee also desires to emphasize the value of cows as actual producers of food, for cows yield more human food than pigs, sheep, or cattle, from the same quantity of vegetable matter.

The shortage of milk during the winter of 1917–18 was found to be due largely to want of organization in distribution. This and other considerations, which are fully set out in the report, led the Committee to believe that the only satisfactory method of dealing with the distribution, utilization, and transport of milk to the best public advantage was for the Government to make itself responsible for the control of wholesale distribution. The Committee also came to the conclusion that the first vital requirement for the maintenance of an adequate milk supply must be a guarantee to producers of such a price as would encourage and enable them to meet the special difficulties due to the war. Impressed with the fact that the fixing of a flat rate for milk discourages the production of milk of special hygienic quality, the Committee recommended the adoption of a scheme, put forward by the Ministry of Food, under which a producer who keeps his herd free from tubercle and fulfils certain requirements in his method of production, can procure a licence authorizing him to charge a price above the maximum fixed for ordinary milk.

The Committee was of opinion that compulsory rationing could hardly be applied to milk, and should be avoided if possible. The hope was entertained that the plan of priority distribution of milk according to the needs of various sections of the community, and of distribution either free or at reduced rates to necessitous children, would suffice to meet the immediate national requirements. The inquiries made by the Committee, and the previous knowledge of its members, made it only too plain that the average consumption of milk by infants and children before the war was quite inadequate for their physiological needs.

The present report, which is dated November 5th, 1918, shows that the Committee has so far confined its attention almost entirely to questions of immediate urgency for the maintenance of the milk supply under war conditions, and to a consideration of those problems of future development which seemed to call for prompt action. The Committee expresses the hope that, after conducting careful investigations and taking the evidence of qualified witnesses, it may be in a position to recommend measures that will not only enable dairying to compete with cereal farming and other forms of industry, but will make possible that development in milk production which is needed in the interest of the country.

[1] Third Interim Report by the Committee on the Production and Distribution of Milk. London: His Majesty's Stationery Office. 1918. (Price 3d. net.)

ROYAL MEDICAL BENEVOLENT FUND.

AT the last meeting of the Committee, held on December 10th, thirty cases were considered, and £282 voted to twenty-five of the applicants. The following is a summary of some of the cases relieved:

Widow, aged 82, and daughter, aged 42, of M.R.C.S.Eng. The daughter has recently had an operation, and is now unable to earn. Mother's income £79 from investments and an annuity. Owing to the high price of food, unable to manage. Rent £32. Voted £10.

Widow, aged 65, of M.R.C.S.Eng. Was left unprovided for, with one daughter, now aged 38, who earns about £20 per annum as daily governess and lives at home. Applicant receives two small pensions amounting to £24. Rent £12. Applicant is now very ill. Voted £10.

Daughter, aged 12½, of L.S.A. who died in 1914; mother also dead. This child is now in charge of an aunt, who applies for help towards clothes and holiday expenses. The aunt is a schoolmistress with £75 per annum, but, owing to increased cost of living, finds she cannot continue to keep her niece. Voted £10.

Widow, aged 61, of M.R.C.S.Eng. Has two daughters, now aged 37 and 34, working as temporary clerks. Husband left no means, and only income of applicant beyond help from her daughters is a small gift from another charity. Relieved once, £12. Voted £6.

Widow, aged 48, of L.R.C.P.Edin. Was left with six children, aged 27 to 10. She earns £30 by clerical work and receives £70 from children. Son on whom applicant mainly depends has been in hospital for three months. Relieved twice, £30. Voted £10 in two instalments.

Daughter, aged 40, of M.R.C.S.Eng. Applicant's income is £20, and she lives with her mother, who also receives help from the Fund, and both are invalids. Relieved four times, £20. Voted £5.

Widow, aged 76, of M.R.C.S.Eng. Applicant receives £50 in dividends and lives in own house. A married daughter, whose husband is in an asylum, lives with her. Applicant suffers from cataract in both eyes and is too old to work. Relieved three times, £36. Voted £12 in twelve instalments.

Widow, aged 60, of L.F.P.S.Glasg. Left with six children, four of whom are married; one daughter, aged 27, at home to look after applicant who is ill, and son, aged 19, who earns 28s. a week. Relieved thirteen times, £142. Voted £12 in twelve instalments.

Daughter, aged 52, of L.R.C.S.Edin. who practised in India. Applicant was left with about £20 per annum, and being delicate is unable to undertake any regular employment. Relatives help occasionally. Relieved five times, £42. Voted £12 in twelve instalments.

Subscriptions may be sent to the Acting Honorary Treasurer, Dr. Samuel West, at 11, Chandos Street, Cavendish Square, London, W.1.

The Royal Medical Benevolent Fund Guild is now called upon, as a result of the war, to deal with many widows and children who, in happier times, would not have thought of asking for assistance. It is glad to receive secondhand clothing and household linen. The class of clothes most wanted is that suitable for boys and girls working in offices, for women, and for old men. The gifts should be sent to the secretary of the Guild, 43, Bolsover Street, W.1.

THE WAR.

THE EAST AFRICAN CAMPAIGN.

In a dispatch from Sir J. L. van Deventer, K.C.B., Commanding-in-Chief East African Force, dated September 30th, 1918, the following references are made to the work of the medical service:

Great efforts were made to keep the hospital accommodation, and all health and sanitary conditions, up to the high standard which the Pike Commission and the visit of Major-General Scott indicated as being aimed at in other theatres. The result has been highly gratifying. The sick rate among the troops, and particularly among Europeans, must always be heavy in a tropical climate, but it is satisfactory to know that everything possible has been done to alleviate suffering and restore health. Among the porters there was an enormous improvement both in the sick and death rates; in fact, the latter is now very little in excess of peace rates.

A school for training natives as hospital attendants and dressers was started at Dar-es-Salaam, and has proved an unqualified success, and great credit is due to the officers responsible for it. After the completion of their military service the natives thus trained should prove a distinct asset to their respective protectorates.

The Commander-in-Chief makes grateful acknowledgement of the work of the Red Cross staff, and adds that the native medical corps recruited in Uganda was of special service. The dispatch records that on May 28th an enemy hospital containing fifteen Germans and seventy-eight other patients, fell into our hands thirty-five miles south of Korewa.

It was a considerable advantage to the enemy that, when inconveniently hampered by sick and wounded, he could simply leave them behind for us to pick up.

In conclusion the Commander-in-Chief records his appreciation of the excellent work done by his own staff, and by commanders and staffs in the field, as well as by all services and departments. Among the officers whose names are particularly brought to notice is Colonel G. W. Tate, C.M.G., D.S.O., A.M.S.,

who deserves great credit for the very efficient manner in which the work of the medical services has been carried out in spite of the difficulties inseparable from active service in a tropical country.

CASUALTIES IN THE MEDICAL SERVICES.

ARMY.

Died on Service.

COLONEL H. G. MELVILLE, C.I.E., I.M.S.

Colonel Harry George Melville, C.I.E., Bengal Medical Service, died at Bagdad on December 7th, aged 49. He was born on March 24th, 1869, and educated at Edinburgh, where he graduated M.B. and C.M. in 1890, and M.D. in 1906, also taking the F.R.C.S.Ed. in 1900. After acting as demonstrator of anatomy in the university, and as resident physician to the Royal Infirmary, Edinburgh, he entered the I.M.S. as surgeon-lieutenant on July 27th, 1892, becoming surgeon-captain on July 27th, 1895, major on July 27th, 1904, and lieutenant-colonel on July 27th, 1912. He held the rank of colonel while serving as consulting physician to the Mesopotamian Expeditionary Force. After serving for some years as medical officer of the 5th Punjab Cavalry (now the 25th Cavalry, Frontier Force), he was appointed professor of anatomy in Lahore University in April, 1899, and in April, 1903, became professor of materia medica and second physician to the Mayo Hospital, Lahore. Prior to the present war he had seen much service on the north-west frontier of India, having served in the Waziristan campaign of 1894–95, including the action at Wana (medal and clasp); the Mohmand expedition of 1897-98 (medal and clasp); and the Tirah campaign of 1897–98, with the operations in the Bara Valley (clasp). He received the C.I.E. on August 26th, 1918.

CAPTAIN W. H. COMPTON, R.A.M.C.

Captain William Henry Compton, R.A.M.C., died of pneumonia in the Richmond Military Hospital on December 6th, aged 57. He was educated at Charing Cross Hospital, and took the diploma of L.S.A. in 1886. After serving as surgeon in the Royal West Indian Mail Steamship Company, and as medical officer in charge of the hospital and quarantine ship H.M.S. *Edgar*, he went into practice at Brighton. He took a temporary commission as lieutenant in the R.A.M.C. on July 1st, 1915, and was promoted to captain after a year's service.

CAPTAIN J. DONALDSON, R.A.M.C.

Captain James Donaldson, R.A.M.C., died at the military hospital at Ras-el-Tin, Egypt, on December 5th. He was the son of the late Mr. James Donaldson, schoolmaster, Dundee, and was educated at the universities of St. Andrews, where he graduated M.A. in 1899, and of Edinburgh, where he took the degrees of M.B. and Ch.B. in 1903, after which he acted as clinical assistant at the Royal London Ophthalmic Hospital, and at the Throat Hospital in Gray's Inn Road. He took a temporary commission as lieutenant in the R.A.M.C. on July 13th, 1917, and was promoted to captain after a year's service.

CAPTAIN N. K. FOSTER, R.A.M.C.

Captain Norman Kessen Foster, R.A.M.C., died on board the hospital ship *Amara* on December 2nd. He was the younger son of Edward A. Foster, I.S.O., of Oxford; was educated at University College, London, and graduated M.B. and B.S.Lond. in 1908. He took a temporary commission as lieutenant in the R.A.M.C. on July 2nd, 1917, and was promoted to captain on completion of a year's service.

CAPTAIN G. E. KEITH, R.A.M.C.

Captain George Elphinstone Keith, R.A.M.C., died in the 62nd General Hospital, Italy, on December 6th, of influenza, at the age of 54. He was the son of the late Dr. Thomas Keith, and was educated at Edinburgh, where he graduated M.B. and C.M. in 1887. After acting as house-surgeon of the Women's Hospital, New York, and as assistant to the professor of clinical surgery at Edinburgh, he went into practice in London. He took a temporary commission as lieutenant in the R.A.M.C. on July 31st, 1915, and was promoted to captain after a year's service. He was joint author, with Mr. Skene Keith, of two works —*A Textbook of Abdominal Surgery*, and *Cancer: Relief of Pain and Possible Cure*—and was for some years secretary of the British Gynaecological Society.

CAPTAIN D. P. LINDSAY, R.A.M.C.

Captain David Paton Lindsay, R.A.M.C., died at Dar-es-Salaam, East Africa, on December 2nd. He was the second son of Ninian Lindsay of Uphall, and was educated at Edinburgh, where he graduated M.B. and Ch.B. in 1912, after which he went into practice at Wrekenton, Gateshead-on-Tyne. He took a temporary commission as lieutenant in the R.A.M.C. on June 5th, 1917, and was promoted to captain after a year's service.

CAPTAIN O. D. PRICE, R.A.M.C.(S.R.).

Captain Owen Douglas Price, R.A.M.C.(S.R.), died in Edinburgh, on December 10th, of pneumonia after influenza, aged 26. He was the son of the late Dr. Edmund Price of Edinburgh, and was educated at the university in that city, where he graduated M.B. and Ch.B. in 1915. He took a commission as lieutenant in the Special Reserve of the R.A.M.C. on October 7th, 1915, and was promoted to captain after six months' service.

Repatriated Officers.

Captain W. R. O'Farrell, R.A.M.C.
Captain J. P. Thierens, R.A.M.C. (temporary).

THE LATE CAPTAIN DENIS COTTERILL.

In the JOURNAL of last week there was a short obituary notice of the late Captain Denis Cotterill, R.A.M.C. We have received the following appreciation from a colleague: From December, 1914, to May, 1918, Cotterill was surgical specialist to the Red Cross Section of No. 11 Stationary Hospital, and the work that he did there must be counted as some of the soundest surgery of the war. He was an extraordinarily neat and thorough operator, and when the occasion demanded could be very quick; his results were surprisingly and consistently good. He had the confidence and respect of the successive consultant surgeons. He never spared himself and was very much beloved by his patients and staff. He was of a gentle and sympathetic

nature and a staunch and firm friend with a high ideal of honour. He was a keen lover of nature and spent much of his leisure in the summer months in making a collection of the local varieties of butterflies which abound in the country round Rouen. He resigned his appointment in May of this year and at once joined the R.A.M.C. and was appointed to No. 50 Casualty Clearing Station, where he died.

DEATHS AMONG SONS OF MEDICAL MEN.

Briscoe, C. W. Hylton, R.A.F., died of influenza pneumonia at No. 19 Casualty Clearing Station, Cawdry, near Cambrai, on December 7th, aged 23. He was the only son of Dr. J. S. Briscoe, D.S.O., M.C., of Charlestown, Natal, and was a student at University College, London, on the outbreak of war; he had been on active service for four years.

Bruce-Clarke, W. R., Captain Royal Air Force, only son of the late William Bruce-Clarke, senior surgeon to St. Bartholomew's Hospital, died at the 1st Eastern General Hospital, Cambridge, on December 1st, of pneumonia after influenza. He attained the rank of captain in the 14th County of London Regiment (London Scottish) on May 11th, 1917, and was seconded for service with the R.A.F.

Clark, R. A. Ronaldson, M.C., Lieutenant Royal Field Artillery, attached R.A.F., son of Lieut.-Colonel Ronaldson Clark of Douglas, Isle of Man, killed in a flying accident, October 18th, aged 24.

Creagh, H. J. P., Captain 11th Battalion (Cambridgeshire) Suffolk Regiment, only child of Major Creagh, R.A.M.C. (retired), died recently of wounds at Le Treport, aged 25. He was educated at Winchester and at Christ Church College, Oxford, where he graduated B.A. in 1914. He served in the Cadet Corps at school and in the O.T.C. at Oxford, and was in the shooting team at both Winchester and Oxford. He got a commission in November, 1914, became lieutenant on September 13th, 1915, and had recently been promoted to captain. He went to France in July, 1915, was thrice wounded, and was mentioned in dispatches on June 18th, 1916.

Davis, G. M., Benbow Battalion, Royal Naval Division, second son of Dr. G. W. Davis of Sidcup, Kent, temporary Captain R.A.M.C., died of septic pneumonia at Delft, Holland, on November 2nd, aged 22.

Griffin, Richard Watson, only son of Dr. Watson Griffin of Crowborough, died of influenza on December 3rd while serving with the Nyasaland Force, East Africa.

Sansom, R. A. F., Second Lieutenant Royal Air Force, third son of Dr. C. Lane Sansom, C.M.G., of Kuala Lumpur, Federated Malay States, killed in a bombing raid over Saarbrucken, May 16th, 1918, aged 21.

Wilkinson, E. F., Lieutenant Royal Air Force, fourth and youngest son of Major Wilkinson, South African Medical Corps, killed in a flying accident in France on November 23rd, aged 19. He enlisted in the South African Infantry at the age of 17, came to England in May, 1917, and got his commission last August.

Wright, Walter Bryan, Private Canadian Infantry, youngest son of the late Surgeon-Major Daniel Wright, I.M.S., killed September 2nd.

[We shall be indebted to relatives of those who were killed in action or die in the war for information which will enable us to make these notes as complete and accurate as possible.]

HONOURS.

VICTORIA CROSS.

THE King has conferred the Victoria Cross upon Captain Bellenden Seymour Hutcheson, C.A.M.C., attached 75th Battalion 1st Central Ontario Regiment.

For most conspicuous bravery and devotion to duty on September 2nd, when, under most intense shell, machine-gun, and rifle fire, he went through the Quéant—Drocourt Support Line with the battalion. Without hesitation and with utter disregard of personal safety he remained on the field until every wounded man had been attended to. He dressed the wounds of a seriously wounded officer under terrific machine-gun and shell fire, and, with the assistance of prisoners and of his own men, succeeded in evacuating him to safety, despite the fact that the bearer party suffered heavy casualties. Immediately afterwards he rushed forward, in full view of the enemy, under heavy machine-gun and rifle fire, to tend a wounded sergeant, and, having placed him in a shell hole, dressed his wounds. Captain Hutcheson performed many similar gallant acts, and by his coolness and devotion to duty many lives were saved.

FOREIGN DECORATIONS.

The President of the French Republic has conferred the decoration of Commander of the Legion of Honour upon Surgeon Vice-Admiral Sir William H. Norman, K.C.B., Medical Director-General, R.N., and that of Chevalier of the Legion of Honour upon Surgeon Commander William W. Keir, C.M.G., R.N., in recognition of distinguished services rendered during the war.

Miss Frances Ivens, M.S.Lond., surgeon-in-charge of the Scottish Women's Hospital, Royaumont, has been awarded the Croix de Guerre with palm. In recommending this award, Marshal Petain, Commander-in-Chief of the French armies of the North and North-East, issued an Army Order from General Head Quarters, dated November 20th, 1918, as follows:

Miss Ivens . . . forcant l'admiration de tous, a assure de jour et de nuit le traitement des blessés français et alliés au cours des bombardements répétes de Villers-Coterets en Mai 1918. A l'approche de l'ennemi, a replie sa formation au dernier moment sur l'Abbaye de Royaumont ou elle a continue sa mission humanitaire avec le plus absolu dévouement.

Mrs. Berry, Miss Courtauld, Miss Martland, Miss Henry, and Miss Nicholson, surgeons to the Scottish Women's Hospital, have been awarded the Croix de Guerre with star. In recommending these awards Marshal Petain issued a regimental Order, stating that these medical women

Ont prodigue a l'hôpital des Dames écossaises, tant a Villers-Coterets, qu'a Royaumont, leur science et leur dévouement aux blessés français et alliés, sous des bombardments répétes.

NOTES.

THE U.S. MEDICAL SERVICE.

WHEN the United States entered the war in April, 1917, the medical corps of the navy numbered about 300 commissioned officers. Now it consists of some 3,000 officers all of whom have received special training for the naval service, and special professional instruction at the naval medical school at Washington, at naval hospitals, on board cruisers, and at great medical centres such as New York, Boston, and Philadelphia, where intensive courses were given by teachers of the highest standing. In July, 1916, the male nurses of the navy, who serve in battleships and go into action with the marines, numbered 1,565; now the hospital corps consists of 14,000 men, for whom there are four large fully equipped training schools with many smaller centres of instruction. The female nurse corps numbers 1,126 women. During the first year of the war the previously existing hospital accommodation in eighteen regular naval hospitals with 1,600 beds was increased by 144 new buildings; by July, 1917, additional beds had been provided to the number of 2,700. The buildings now nearing completion or contracted for will give the medical department of the United States navy between 11,000 and 12,000 beds.

Major-General William C. Gorgas, late Surgeon-General of the United States army, has been made a Grand Officer of the Order of the Crown of Italy in recognition of his distinguished work in military sanitation. The presentation was made on November 5th, in the office of the Surgeon-General at Washington, by Major-General Emilio Guglielmotti, military attaché to the Italian Embassy.

England and Wales.

MEDICAL MEETING AT MANCHESTER.

THE Medical Secretary addressed a meeting called by the Lancashire and Cheshire Branch of the British Medical Association at the Onward Buildings, Manchester, on December 12th. The president of the Branch, Dr. R. Harris of Southport, was in the chair, and the room was crowded. The subject of the address was "Coming changes in medical affairs and the position of the British Medical Association in relation thereto." Dr. Cox dealt with the reconstruction problems which would face the medical profession and every other calling in the immediate future. He reminded the audience of somewhat similar problems following the publication of the reports of the Royal Commission on the Poor Law in 1909, which the Association dealt with by issuing a report in which the possible developments of medical services for the community were examined, and certain questions were put to the profession in order to elicit their opinion. The response of the profession was exceedingly good, and enabled the Association to place before the Government the views of the profession when the National Insurance Bill was introduced. He thought that the same course might be followed with advantage on this occasion, so that when the Ministry of Health was established and the new Minister proceeded to develop and improve the provision of medical attendance for the community he might know what line the medical profession thought should be taken in the best interests of the community. This discussion should take place as soon as the majority of the doctors in the Services had returned. It would be unfair to come to any definite conclusions in their absence. When they returned, the problems could be attacked with a perfectly open mind, the question for the profession being, not "What is the minimum service that the community could be induced to accept?" but "What is the kind of medical service that ought to be offered to the men who have been fighting for us, and their wives and

families?" Indeed he thought that an even more practical question would be "To what kind of service would medical men be content to trust their own wives and families?" Nothing less was good enough. In his opinion no body was capable of eliciting the opinion of the profession on a matter of this kind except the British Medical Association, and whatever criticism might be brought against that body, it was useless to think of setting up another to take its place. It had taken nearly a hundred years to get an Association which could speak for a majority of the whole profession, and for a large majority of general practitioners. Obviously it would take a very long time to establish another body which would be anything like as representative, in face of the strong opposition of the Association, which was not likely to give up the position it had established at so much cost. He was not arguing that the Association was perfect. Nobody who had the privilege of receiving so much candid criticism as he did could be under that delusion; but some of the best authorities had declared that the constitution of the Association was thoroughly democratic and a model for similar professional bodies, and if members of the profession would bring to it youth, enthusiasm, and new blood the Association could do anything the profession was likely to ask. He warned his hearers against alleged "short cuts." During his experience of medical organization several substitutes for hard individual work had been suggested, but nothing could take the place of that unselfish and unstinted personal devotion which had made the Association what it was. The legal immunities of trade unionism—the latest panacea—were exceedingly uncertain, according to the best legal authorities. Members of the profession would be depending on a very broken reed if they relied on this—which, in addition to its uncertainty, would be rejected for other reasons by large numbers of the profession—instead of on the strength to be obtained from a large body composed of all kinds of practitioners, and in which the social and scientific elements could reinforce the medico-political and "bread-and-butter" side.

Scotland.

Erskine Hospital for Limbless Men.

Speaking at the second annual meeting of the Princess Louise Scottish Hospital at Erskine, held in the City Chambers, Glasgow, on December 10th, Sir William Macewen referred to the strenuous work of the surgeons and physicians during the year and of the benefit to the limbless men of continuity of treatment afforded by the fact that both preparatory and fitting treatment were given under the one roof by the same surgeons. He expressed the hope that if workshops were established in Glasgow continuity of training would be arranged between them and the hospital workshops. The Lord Provost stated that since the opening of the Erskine Hospital, 3,454 patients had been admitted to the institution, which now contains 400 beds, while 2,697 patients had been fitted with new limbs and 530 patients with parts of new limbs. A vote of thanks to the surgical and medical staff of the hospital for their voluntary service was carried, on the proposal of Sir Archibald M'Innes Shaw.

Post-graduation Instruction at Glasgow.

At a meeting of the Glasgow University Court held on December 12th, Principal Sir Donald MacAlister, K.C.B., M.D., who presided, referred to a proposal which was made at the last meeting to institute post-graduation courses for medical graduates. The Senate, after considering the report on this subject by the Faculty of Medicine, stated that they would welcome a well considered scheme for the organization of such courses, and that as there existed a committee representing all sections of the Glasgow Medical School, which was instituted in 1914 on the suggestion of the Faculty of Medicine, they were taking steps to get into touch with this body as a preliminary to a full discussion.

Central Midwives Board for Scotland.

At the last meeting of the Central Midwives Board for Scotland, held in the offices, 50, George Square, Edinburgh, with Sir Halliday Croom in the chair, the cases of three midwives were heard. One woman was summoned on the charge of failing to send for medical assistance in a case of ophthalmia neonatorum, and other breaches of the rules. Her name was removed from the roll of midwives and her certificate cancelled. The second woman was charged with failing to send the proper form for medical assistance in a case of stillbirth. She was cautioned strictly to observe the rules of the Board, and the local supervising authority was instructed to report upon her conduct and fitness as a midwife. The third woman was summoned for failing to advise medical assistance for a child suffering from serious skin eruptions, and for other breaches of the rules. She was suspended from practice for one month, and the local supervising authority was instructed to report on her ability to take pulse and temperature before she resumed practice.

Correspondence.

EDINBURGH UNIVERSITY AND ANATOMICAL NOMENCLATURE.

Sir,—You have already called attention[1] to the confusion which has been caused by the introduction of the Basle Anatomical Nomenclature—a nomenclature which, as you have pointed out, is purely of German origin. I am glad to know that the Faculty of Medicine of the University of Edinburgh has taken the matter up and has issued a circular to "medical schools and corporations in Britain," suggesting the formation of a committee to consider our nomenclature, and also proposing that similar committees should be formed in the British Dominions and the United States of America. I am certain that the courteous Dean of the Medical Faculty of Edinburgh University, who has issued the circular on behalf of his Faculty, does not wish to misrepresent to medical schools and corporations in Britain what has already been done to restore our British nomenclature, but in several points his circular is misleading.

At a special general meeting of the Anatomical Society of Great Britain and Ireland, held at King's College, Strand, London, on March 1st, 1918, it was unanimously agreed to retain our British anatomical nomenclature—that nomenclature being defined as the one used in the tenth edition of *Quain's Anatomy*. The Edinburgh circular, while making the resolution of the Committee of the Anatomical Society the basis of its action, omits to state that the resolution was adopted by the society, which includes all the anatomists of this country and the majority of anatomists in the British Dominions. The circular also omits to state that at the same meeting committees were appointed to revise the English terms used in anatomy, and in every instance where an improvement was possible—no matter what the source of the better term might be—to recommend that improved term in their report to the society. As the Professor of Anatomy in the University of Edinburgh was appointed to serve, and so far as I know is serving, on one of these committees which are now at work, the Dean of the Faculty cannot be ignorant of the fact that the work proposed in the circular is already being performed by committees of British anatomists.

Further, the Anatomical Society was keenly alive to the importance of moving in harmony with the anatomists of the United States, and therefore requested its secretary, Professor J. E. S. Frazer, to communicate with the secretary of the Association of Anatomists in North America, inviting the co-operation of the association. In answer, a very sympathetic reply was received, one which leads me to suppose that American medical men are just as anxious as British to be rid of the Basle system of naming anatomical structures.

The Anatomical Society is fully aware that the settlement of a nomenclature is not the prerogative of anatomists, but is a matter in which every medical man and medical corporation has a right to be heard; but I think it is the duty of anatomists to make the first move and submit their proposals to the various medical corporations which are concerned. Also it must be remembered that Edinburgh University has been the chief sinner in

[1] British Medical Journal, 1917, ii, p. 121.

adopting the foreign nomenclature, now the cause of so much confusion.

I append a memorandum, written in reply to the Edinburgh circular, by Professor G. D. Thane, who is and always has been regarded as the leading authority on all matters relating to the literature of British anatomy.—I am, etc.,

ARTHUR KEITH,
President of the Anatomical Society of Great Britain and Ireland.

December 16th.

Professor G. D. Thane's Memorandum on the Circular issued by the Dean of the Medical Faculty of Edinburgh University.

This movement is an attempt on the part of publishers and certain anatomists to force the use of the German anatomical nomenclature on those who do not desire it. The matter has been discussed several times at the Anatomical Society, and the change is not there regarded with favour, as is shown by the report cited in the circular. Being unable to get the support of the society, the promoters are now endeavouring to attain their end in another way. The movement originated with Americans who had studied in Germany.

The German anatomical nomenclature was drawn up by a committee of the German Anatomical Society, in which I had a small part, and was adopted by the society in 1895. It may be a good nomenclature for German use, but it is not, in my opinion, suitable for British use, and I have always refused to adopt it. My view is confirmed, and indeed intensified, every year, as I see the unfortunate students struggling with the cumbrous, and to them unintelligible, Latin names, badly selected, and in many cases absolutely false.

The established and venerable British nomenclature undoubtedly has faults, but it is, on the whole, far better than the German. The British nomenclature is closely associated with the French, through which language it has in large measure come into our tongue; and where the British terms differ from those either of the French or German systems I have no hesitation in saying that ours are generally preferable.

The confusion which certainly exists is due solely to the action of the persons referred to in introducing the German nomenclature into the textbooks without ascertaining the views of anatomists. The difficulty will be got over at once by their retracing their steps and restoring the *status in quo*.

In the *Spectator* of December 7th there is a reference to German work on another medical subject. In this is the statement: "But we can reasonably hope to be saved in future from the hasty adoption of German nomenclature." It is much to be hoped that this will turn out to be true; and it is devoutly to be wished that it could be made retrospective.

December 12th, 1918. G. D. T.

THE TREATMENT OF WAR PSYCHO-NEUROSES.

SIR,—Your suggestive paragraph under the above heading (December 7th, p. 634) has prompted me to the following comments, for which I hope space may be found. The two broad lines of treatment adopted in these disorders seem so curiously opposed to one another, both in principle and practice, as to be inevitably thought-provoking. Although, as you suggest, both schools either actually or tacitly assume a psychic basis for the symptoms in the majority of the cases, their paths soon diverge. The one adopts any means—physical, mechanical, or psychic—which will relieve or combat the immediate symptoms and at the same time assuage the pain or distract the mind from painful memories. The other, the true psycho-analytical school, so far from suppressing or seeking to repress the painful recollections and emotional experiences which have led up to the disorder, strive to bring them to the light of day—rehearse, as it were, revivify, and induce the patient to live them over again.

It may be interesting to consider how far this latter practice and the principle upon which it is founded accord with ordinary experience in the class of case here dealt with. Do we as a matter of fact find that the patients are unable to recall the emotional disturbance which has led up to the present disorder? Unwilling they may be, but not, I contend, as a rule unable. Indeed, in the majority of the cases, so far from being embedded deep down in the consciousness and in need of the delving process of the psycho-analyst to unearth them, they are painfully and terribly near the surface. One would say rather that they occupy the foreground of the consciousness. That the patients in such a case are unwilling to recall their experiences one is ready to believe, and that they are eager to avail themselves of any and every means of distraction would appear equally natural. The difficulty lies in rendering such means of distraction available to a patient whose one preoccupation is his illness and all that has led up to it. The soldier suffering from nerve shock, for example, starts at the sound of a motor horn, and is transported into a panic of fear at the thoughts of an air raid—in the first case owing to a pure physical reflex acting on a tense nervous system, and in the second through a simple association of ideas. To suggest that in either case he is unaware of the mechanism which produces this terror is to suppose that which is not. True, he may not express himself in technical language—he starts because, as he says, he is "all nerves," and he fears an air raid because "it reminds him of past experiences."

The mechanism which produced the original symptoms and which continues to reproduce them obviously varies with the individual case, and may be, and frequently is, multiple in character. The tendency of symptoms to become fixed often through sheer lack of will power in the subject is now generally recognized, and the importance of early and energetic treatment in such cases quite rightly insisted upon by many writers. The lowering of the affective tone, the emotional impressibility (of which, by the way, the sufferer is painfully aware), offers a favourable atmosphere for the development of the psycho-neuroses. Superadded to and complicating the effect of depressing emotions one usually has the effect of auto-suggestion or hetero-suggestion to which a man in a depressed state of mind is peculiarly vulnerable. And here it may be noted that where the all-pervading sense of depression is present, argument, persuasion, and counter-suggestion are usually futile. Any one who has attempted suggestive treatment in true melancholia will realize the truth of this, the difference, after all, being in degree, not in kind.

Seeing that the morbid condition arose from military service, and is definitely associated with it in the patient's mind, anything remotely connected with army life cannot fail to perpetuate the symptoms. It is true that, in the milder cases, removal from active service conditions is sufficient to inaugurate a cure, but the effect of discharge from service and its raising of the emotional tone, with frequently "miraculous cures," is one of the everyday phenomena for the neurological wards. One does not wish to labour the point, but it seems to me that in a great majority of the psycho-neuroses of the war the causes are neither so recondite nor the treatment so esoteric as the psycho-analyst would have us believe. There remains no doubt a residuum of cases which do not yield up their secrets so easily, and which will constitute the peculiar province of the psycho-analyst. Perhaps, however, the most important fact which emerges from a study of these cases is the primary importance of a detailed study of the individual case, both from the point of view of the original mental make-up and antecedents and the manner in which he is likely to react to a given set of circumstances. The mental pattern of man is so various, and the type of reaction so curious, and at times inexplicable, that a rigid adherence to any formulary or fixed system of treatment stands self-condemned.—I am, etc.,

J. E. MIDDLEMISS,
(Late) Lieutenant R.A.M.C., and Medical Officer to the Leeds Committee for Care of Mental Defectives.

December 13th.

ACIDOSIS.

SIR,—In the note on acidosis by Dr. Dougall, published in your issue of December 14th, p. 655, I think there is some confusion between cause and effect. Some time ago I published a note in your columns on acidosis in children. I believed then that acidosis existed as a clinical entity and that many symptoms were caused by the circulation of acetone and acetone-producing bodies in the blood. Extended experience has taught me that acetonuria is a constant concomitant of most bacterial invasions in children. Thus I have found it in pneumonia, measles, anterior poliomyelitis, and in influenza, and a systematic

testing of the urine would most likely reveal it in all febrile disorders. It is highly probable that one of the earliest effects of bacterial invasion in children is katabolism of the body fats, with the production of β oxybutyric acid, which begets diacetic acid, which begets acetone.

No doubt these bodies, circulating in the blood, produce symptoms, but so do other products of katabolism in many disorders, and this scarcely justifies a diagnosis based solely upon the presence of an abnormal body in the urine.—I am, etc.,

Wanstead Park, Essex, Dec. 15th. A. CAMPBELL STARK.

THE ETIOLOGY OF INFLUENZA.

SIR,—With reference to the editorial note on the etiology of influenza, in your issue of December 14th, may I be allowed to state briefly another view, which at first sight may appear to be at variance with the theories tentatively put forward but is nevertheless not necessarily so? The conclusions arrived at are based on observations made by me in the course of an investigation carried out at the Royal Berks Hospital, Reading, and have already formed the subject of a communication which I was privileged to make at a meeting of the Reading Pathological Society held on December 12th.

The general opinion at the present moment appears to be that there exist at least two separate infections—a primary which renders the soil suitable for the secondary and more fatal one. Those who hold this view may be divided into two groups. One of these, possibly the larger, considers that the primary infection is the *B. influenzae* (Pfeiffer); the other, led by Nicolle and Lebailly, believes that it is an unknown virus of a filtrable nature. There is, however, a third possibility which I venture to suggest. Not once have I been able to isolate Pfeiffer's bacillus from the Reading series of cases. Those who hold to the Pfeiffer tradition will say that the technique has been faulty or the media employed unsuitable. A review of the literature published since the onset of the first wave of infection earlier in the year, reveals the fact that only in a very insignificant proportion of cases has Pfeiffer's bacillus been found present. One is driven to the conclusion, therefore, either that bacteriological technique generally is of a very poor order or that Pfeiffer's bacillus is not a primary agent in the etiology of the disease. I prefer to hold the latter view. The second theory, that the responsible agent is a filter-passer, is a fascinating one. If there be such an agent it is unlikely that any vaccine, prophylactic or otherwise, now in use will be of any value, and the substantiation of this view would probably condemn us to wait for some considerable time before an efficient and scientific method of prevention or cure is found.

There is another possibility, however, which I advance as a result of my own observations. From every case which I have examined I have been able to isolate a certain organism. It is the one organism which I have found common to all cases of the disease. Is it not a little extraordinary that, if there be a special primary infection such as Pfeiffer's bacillus, the secondary infection should always be one particular organism rather than one thing in one case and something quite different in another? The latter surely is what we ought to expect. In point of actual fact, however, I have found the so-called secondary organism always to be the same. Not only so, but it is an organism apparently not to be found in the textbooks. We are faced, therefore, with the proposition, if we accept the two-infection theory, that, common to all cases there is a primary infective agent, known or unknown, followed (to judge from the Reading cases at least) by another organism of a hitherto undescribed character, also common to all. Personally, I am unable to accept such a theory, and would suggest that, in view of the rarity with which Pfeiffer's bacillus has been found, the latter organism has nothing to do with the epidemic. I would suggest that the real cause is the organism which I have invariably found in the Reading cases. I would suggest, further, that one of the reasons why it has not received that attention which it deserved lies in the fact that it is extremely pleomorphic in its character, especially when first isolated. It may grow in the form of enormous bacilli, or as extremely long chains of giant cocci, or cocci alternating with giant bacilli of all shapes. Later on, under certain conditions, it loses this pleomorphism and comes to resemble a staphylococcus (with certain minor differences), and finally assumes the form of large deeply Gram-positive tetrads. The cultural characters vary with the different morphological phases, and it shows an extraordinary variability towards Gram's stain. It is haemolytic, insoluble in bile, and is pathogenic to animals. Pleomorphism and apparent instability are its chief characteristics. It may simulate nearly every known type of organism. In spite of this it tends to assume, under certain conditions, a stable form mentioned above. It is interesting to note in this respect that from the spleen of two cases which died I was able to isolate in culture only the stable form of the organism. I therefore venture to put forward the theory that the organism possesses two phases at least, one pleomorphic and unstable, the other stable and more uniform. The former, I would suggest, bears some relation to the acute stage of the disease, and is the form found where a natural immunity is wanting. The stable form is assumed when immunity has been established or is present naturally. If the invariable presence of this organism is confirmed by other workers it will probably lead to radical changes in our ideas of bacterial activity. It would mean that certain organisms at least possess some sort of life-cycle, one or more phases (corresponding to the pleomorphic unstable stage) being associated with acute clinical symptoms and with lack of immunity, while in cases of natural or acquired immunity the organism is present only in the more stable stage—its end phase. Such a theory would at once explain the relationship of Hofmann's to the Klebs-Loeffler bacillus, around which so much controversy has raged. The latter, which is pleomorphic, may be regarded as the form met with in cases devoid of immunity, while the more stable form—the Hofmann's bacillus—would represent the organism as found in contacts who do not contract the disease, presumably because they already possess an acquired or natural immunity. It would also confirm a view which I expressed in 1915, and which Hort has independently expressed and elaborated—namely, that the meningococcus is merely a phase in the life-history of a pleomorphic diphtheroid. The meningococcus in that case would represent the end or stable phase of the organism and its presence would be an indication of the degree of immunity present. Such a view could be still further illustrated and opens up important side issues in relation to treatment, etc., and would explain many things hitherto obscure in bacteriology. It is a view not inconsistent, as I have said, with a filter-passer theory, which I have not had the means to investigate. If, however, it be substantiated, it means that preventive and curative treatment are at once possible, and in this connexion may I add that a sensitized vaccine made from this organism has already given evidence of this curative power.—I am, etc.,

Reading, Dec. 17th. ROBERT DONALDSON.

BOOT HEELS AS A CAUSE OF FLAT-FOOT.

SIR,—Under the above heading Captain Fairweather has published three letters in the BRITISH MEDICAL JOURNAL; yet in the last, on December 14th, he writes: "Consequently with high heels the arch is preserved"; which statement repudiates his own heading. He further says: "With heelless boots the weight falls mostly on the heels," and later, "the weight of mountaineers descending steep slopes falls mostly on the heels." Likewise two obviously contradictory statements, for a heelless boot lowers the heel and a downward slope raises it.

It seems to me that the only consistent part of the three letters is that the conclusions disagree, which is the logical consequence of the arguments advanced.—I am, etc.,

Clyst St. George, Devon, Dec. 13th. D. W. SAMWAYS.

SIR,—Captain Fairweather, in the JOURNAL of December 14th, states that "standing tiptoe exercises unfortunately strengthen the gastrocnemius and soleus, whose action flattens the arch when the weight is on the ankle-joint." Let him try an experiment which I tried thirty years ago. I marked on the inner side of my own son's foot a black

curved line following the curve of the plantar arch. This was photographed in the standing position. Then the boy raised his foot to tiptoe and a second photograph was taken, which showed a marked increase in the curve of the black line. The explanation, of course, was that the flexor muscles, acting with the tibialis posticus and peroneus longus, concurrently with those muscles mentioned by Captain Fairweather, acted as bowstrings or tie-rods to the arch. All this I have published repeatedly.—I am, etc.,

Gloucester, Dec. 14th. T. S. ELLIS.

*** This correspondence cannot be continued.

Universities and Colleges.

UNIVERSITY OF OXFORD.

THE following candidates have been approved in the examinations indicated:

SECOND M.B.—*Materia Medica and Pharmacology*: C. K. J. Hamilton, M. H. MacKeith. *Pathology*: H. P. Hodge. *Forensic Medicine and Public Health*: T. A. Brown. *Medicine, Surgery, and Midwifery*: C. F. Krige, A. E. Thomas, H. W. Toms, B. Tordoff.

At a congregation held on December 14th the degree of bachelor of medicine was conferred on the following:

A. E. Thomas, B. Tordoff, H. W. Toms, C. F. Krige.

UNIVERSITY OF CAMBRIDGE.

THE Special Board for Medicine has elected Dr. G. H. F. Nuttall, F.R.S., Quick Professor of Biology, as its representative on the General Board of Studies for a period of four years.

UNIVERSITY OF EDINBURGH.

THE following candidates have been approved at the examination indicated:

FINAL M.B., CH.B.—R. F. Boltman, H. C. Brayshaw, E. B. Brown, D. H. Cameron, E. Chonglop, A. Chen Yu Chow, J. M'M. Cole, K. C. Crosbie, H. N. Daniel, C. G. L. van Dyk, W. Y. Eccott, E. C. Fahmy, N. D. P. de V. Graaff, G. H. Gunn, G. J. Hughes, L. W. Innes, N. W. Johnston, E. G. Joseph, T. W. Lowden, Anne L. MacDonald, A. L. M'Ilwaine, J. K. Mitchell, G. Nicholson, I. Platzky, J. J. Wessels.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

AN ordinary Council was held on December 12th, when Sir G. H. Makins, President, was in the chair.

The late Mr. Nottidge Charles Macnamara.—A vote of condolence was passed to the relatives of the late Mr. Macnamara, past Vice-President and past member of the Council.

Issue of Diploma of Fellow.—The diploma of Fellowship was granted to three candidates found qualified at the recent examination.

Election of Examiner.—Mr. V. Warren Low (St. Mary's Hospital) was elected a member of the Court of Examiners.

Harveian Oration.—This will be delivered by Sir Anthony Bowlby on February 4th, 1919.

The Services.

INDIAN MEDICAL SERVICE PROMOTION.

IN view of the special conditions under which promotion has been made in certain ranks of the Royal Army Medical Corps during the present war, the Secretary of State for India in Council, in consultation with the Army Council, has adopted the following special measures in regard to the promotion of officers of the Indian Medical Service:

Lieutenants of the Indian Medical Service appointed up to December 31st, 1916, will be promoted to captain, with effect from the completion of one year's service for promotion. For officers appointed thereafter the usual period of service for promotion (three years from date of first commission) will again come into force. Previous military service rendered after July 16th, 1915 (the date of first commission of officers appointed at the last competitive examination for the Indian Medical Service), as a medical or combatant officer, or in a post usually filled by an officer, will count towards promotion as already announced.

Special promotion under the measure now announced will not be given from an earlier date than September 1st, 1915, and will not carry pay and allowances from an earlier date than September 1st, 1916. Such promotions dating between September 1st, 1915, and September 1st, 1916, though not carrying pay, will be effective for purposes of wound, injury, and family pensions or gratuities.

The Secretary of State for India in Council has also approved the antedating of the promotion of certain captains of the Indian Medical Service with the view of securing for them a relative equality in seniority with that of corresponding officers of the Royal Army Medical Corps whose promotion was specially accelerated by war conditions. These antedates will carry pay.

Promotion in each individual case will be subject to the officer being recommended as fit for promotion.

On the conclusion of the war officers will not be eligible for promotion to higher substantive rank until their total period of service for promotion is equal to that which would have been required if the special measures herein detailed had not been adopted.

Officers are not entitled to assume higher rank on completing the above-mentioned periods of service until their promotion has been notified either in Expeditionary Force Orders, the *Gazette* of India, or the *London Gazette*.

Antedates of rank and retrospective promotions due under the measure will now be gazetted as soon as possible, but some interval must necessarily elapse in those cases in which recommendations as to fitness for promotion have to be obtained.

Retrospective adjustments of pay becoming due in consequence of these promotions will be made as soon as practicable after the appearance of the *Gazette* notification of promotion.

The Secretary of State for India in Council has also decided that, with retrospective effect from the beginning of the war, acting rank for officers serving in the field shall be granted in the Indian Medical Service to the same extent generally as obtains in the Royal Army Medical Corps.

SERVICE MEMBERS OF PARLIAMENT.

THE Army Council has made the following rule with regard to officers who may be elected members of Parliament:

Regular officers on the active list will either be seconded or placed on half-pay from the date of their election to Parliament; those in the Reserve of Officers and on the retired list will revert to unemployment. Officers in the Special Reserve will be demobilized; those in the Territorial Force will be demobilized (officers at present in the Territorial Force Reserve will remain therein), and those in the New Army will relinquish their commissions on election to Parliament.

Obituary.

GEORGE OGILVIE, M.D., B.SC.EDIN., F.R.C.P.LOND.,

Senior Physician to the French Hospital.

THE death of Dr. George Ogilvie at the age of 66 will come as a surprise to a very large circle of professional and non-professional friends. He was a familiar figure at many social gatherings when such were common, and his fame as a raconteur, especially of Scottish stories brimful of the unctuous humour especially characteristic of them, will not soon fade from the memories of those who knew him best. But George Ogilvie was much more than a good story teller. He was an exceedingly well trained scientific physician, a man of wide human sympathies and sterling honesty, and a staunch and trusty friend. His big, sturdy frame and his somewhat severe expression were at first sight somewhat awe-inspiring, but when his kindly, genial smile irradiated his features even a casual acquaintance felt at home with him at once.

Dr. Ogilvie took first of all his B.Sc. degree at Edinburgh University in the mathematical sciences, and gained numerous prizes and distinctions. He then proceeded to the study of medicine, and took his M.B. in 1876. After graduation he went to the Continent, and studied in Austria, Italy, and France, and in his Continental wanderings he acquired that easy command of foreign languages—especially French—which proved so useful not only to himself but in many instances to the medical profession of London. He was always in request on the occasion of Continental medical deputations to this country, and his assistance on such occasions was invaluable. He early became associated with the Hospital for Epilepsy and Paralysis—at one time in Regent's Park and now in Maida Vale—and he remained up till his death on its active staff. His association with this hospital naturally stimulated his interest in nervous diseases, and his contributions to medical literature had reference chiefly to the problems connected with these diseases. He was also senior physician to the French Hospital, and he was a Chevalier of the Legion of Honour, and had been decorated by the late King of Portugal and by the King of Italy. He was elected a Fellow of the Royal College of Physicians in 1908.

Two or three years ago he had an illness which caused concern to his friends, and those who knew him best recognized with no little concern that he had to a large extent lost the spring and energy which used to characterize him. His final illness was brief, and was no doubt

aggravated by an accidental fall which occurred a few weeks before the end came. He had a strong and striking personality, and his death leaves not only his friends but the whole community poorer. He had no family, but he leaves a widow, to whom all his friends will wish to offer their sincere sympathy.

WE regret to record the death at West Kensington on December 9th of Dr. REGINALD PERCY COCKIN, assistant medical entomologist to the London School of Tropical Medicine, and director of the Seamen's Hospital venereal disease clinic at the Albert Dock. He was born at Hull in 1879, and studied medicine at Caius College, Cambridge, and the London Hospital; he graduated M.A., M.B., and B.C. in 1906, and proceeded M.D. seven years later. After acting as casualty house-surgeon of Hull Royal Infirmary he entered the West African Medical Staff, where he served as district surgeon of Okigwi in Southern Nigeria, and as medical officer of the Niger Cross River expedition in 1908–09. In 1910 he joined the Colonial service in Cyprus, where he was a district medical officer and examiner under the Pharmacy Act. In 1913 he was transferred to Grenada, West Indies, where he held the posts of resident surgeon to the colony and yaws hospitals and bacteriologist. In 1915 he took a temporary commission as lieutenant in the R.A.M.C., and served under Colonel Leiper in Egypt in the investigation of bilharziosis. After his promotion to captain he was invalided, and then rejoined the staff of the London School of Tropical Medicine as assistant helminthologist and assistant medical entomologist under Lieut.-Colonel Alcock, C.I.E., and also acted as deputy director of the school. He was a Fellow of the Society of Tropical Medicine and Hygiene, and the author of several papers on tropical diseases.

WE regret to record the death of Dr. HUGH PALLISER COSTOBADIE, which took place at Midsomer Norton, Somerset, on December 3rd, from pneumonia following influenza. He was born in 1880, the eldest son of Ackroyd Palliser Costobadie of Torquay. His early life was spent in New Zealand, Canada, and America. He entered Guy's Hospital for his medical education in 1899, and obtained the M.R.C.S. and L.R.C.P. diplomas in 1905 and the F.R.C.S. Edin. in 1913. After holding appointments as house-surgeon to the Royal Ear Hospital and resident surgical officer at St. Mary's Hospital for Women, Manchester, he settled in Midsomer Norton. He was surgeon to Paulton Memorial Hospital and medical officer to Downside School; at the former he did a large amount of excellent surgical work. Dr. Costobadie was the Representative for the Bath Division at the Representative Meetings of the British Medical Association. At the outbreak of the war he offered his services, and was in France with the 12th Field Ambulance in August, 1914; he served with the same ambulance for twelve months, and was mentioned in dispatches. At the expiration of his contract he resigned his temporary commission and returned to practice. Later he joined the staff of the Bath War Hospital, where his good surgical work was highly appreciated. He was held in high esteem both as a doctor and a friend in the country surrounding his home. He married Ellen Constance, the daughter of Hamilton Norman Sleigh of Melbourne, Australia, who survives him, together with his three sons.

DR. MALCOLM BLACK of Glasgow, who died on December 12th at the age of 70, received his medical education at Glasgow University, where he graduated M.B., C.M. in 1874, and M.D. in 1887. He had practised in the Townhead district of Glasgow for forty years, and was consulting physician to the Glasgow Maternity Hospital. He was a member (and late president) of the Glasgow Obstetrical and Gynaecological Society and of the Glasgow Eastern District of the British Medical Association.

DR. ALEXANDER CAMPBELL NICHOLSON MCHATTIE, medical officer of Zanzibar, East Africa, died there of pneumonia after influenza on November 17th. He was educated at Edinburgh, where he graduated M.B. and Ch.B. in 1900, subsequently taking the D.P.H. at Cambridge, with distinction in hygiene, in 1911, and the diploma in tropical medicine and hygiene in 1912. After holding the post of chief medical officer to the Government of the Bahamas Islands, West Indies, he joined the West African Medical Staff, and served in Nigeria. He had recently been appointed to Zanzibar.

THE death took place, on November 7th, at Dundrum, co. Tipperary, of Dr. STEPHEN KEOGH from pneumonia following influenza. He received the diplomas of L.R.C.S.I. and L.A.H. in 1891, and was for some twenty-six years Poor Law Medical Officer and Medical Officer of Health of the Kilpatrick Dispensary District in the Cashel Union. He had a large practice and was very popular with all his patients. Dr. Keogh was a man of fine stature and physique, so that his death at a comparatively early age, and after a few days' illness, came as a great shock to his many friends. He was much respected by his fellow practitioners in South Tipperary.

DR. LEON BRAILLON, sometime professor of clinical medicine in the medical school of Amiens and physician to the hospitals of that city, died on October 9th of streptococcus infection. He was mobilized at the beginning of the war, and was taken prisoner at Charleroi. He had suffered much in captivity, and was repatriated in broken health. He returned to France to find his home destroyed. Nevertheless he insisted on resuming his military duties, and it was in the course of a bacteriological research at the Val-de-Grâce Hospital that he met his death.

DR. MORELLI, professor of medicine in the University of Pisa, died on October 16th, 1918, as the result of infection contracted in the course of a bacteriological research in influenza.

Medical News.

PROFESSOR EMILE ROUX has resigned the post of director of the Pasteur Institute, Paris, and Dr. Albert Calmette of Lille has been appointed his successor.

THE programme of lectures to be delivered before the Royal Institution of Great Britain, 21, Albemarle Street, W.1, during the early months of next year, has been issued. The Friday discourse on January 24th will be given by Lieut.-Colonel Andrew Balfour, C.B., C.M. M.D., on "One Side of the War"; that on February 7th will be given by Colonel J. G. Adami, F.R.S., C.A.M.C., on "Medical Research in its Relationship to the War"; and that on March 14th by Professor Arthur Keith, M.D., F.R.S., on "The Organ of Hearing from a New Point of View."

THE London County Council has decided to increase temporarily the remuneration of its district medical officers. For attendance, including all requisite medicines and simple surgical dressings, together with such certificates as may be required, the fee has been raised from 10s. to 11s. 6d. a year for each man; for certificates for persons not allowed medical attendance by the Council, from 2s. 6d. to 3s. for each certificate; for each certificate given under the regulations dealing with suspected infectious disease in common lodging-houses, from 7s. 6d. to 8s.; and for each certificate under the regulations in connexion with the Children Act, from 10s. 6d. to 12s.

THE Local Government Board has issued a circular dated December 16th, stating that it is now, in conjunction with the Treasury, prepared to consider applications from local authorities for permission to raise loans in order to enable them to put into operation schemes of public utility, such as housing, water supply, sewerage, hospitals, gas and electricity, and construction and improvement of roads, which are of urgent importance. The president, Sir Auckland Geddes, is desirous of receiving as early as possible particulars of any works which county or district councils are proposing to carry out at once and pay for by means of loans. It is Sir Auckland Geddes's particular desire that all schemes for the housing of the working classes after the war should be submitted to the Board without delay.

THE sixteenth annual report of the Gordon Memorial College at Khartoum shows that in spite of adverse conditions and lack of personnel the work, both educational

and research, is proceeding satisfactorily. The proposal to erect a medical school in Khartoum as a Sudan memorial to Lord Kitchener has been endorsed by the governing body. A committee appointed to give effect to this proposal has not yet issued an official report, but it appears that about £9,000 has been already collected in the Sudan, very largely by subscriptions from natives. There is every hope of raising a worthy building to commemorate the founder of the College as soon as conditions are favourable for building on a large scale. Dr. Chalmers, in his report on the work of the Wellcome Tropical Research Laboratories during 1917, states that the difficulty of obtaining apparatus and reagents has increased and seriously interferes with the work of the chemical section; but, fortunately, the bacteriological and entomological sections have so far been able to keep up their supplies. The number of routine examinations carried out in the laboratories was larger than ever before; this was partly due to the presence of cerebro-spinal meningitis in the Sudan. Until last year it was not possible to carry out the proper technique of the Wassermann test in routine examinations, owing to the difficulty of keeping guinea-pigs alive in the climate of the Sudan; but through the aid of the Zoological Gardens authorities this trouble has now been tided over, at least for the time being.

Letters, Notes, and Answers.

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

The postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2631, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra, Westrand, London*; telephone, 2634, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin.

The address of the Central Medical War Committee for England and Wales is 429, Strand, London, W.C.2; that of the Reference Committee of the Royal Colleges in London is the Examination Hall, 8, Queen Square, Bloomsbury, W.C.1; and that of the Scottish Medical Service Emergency Committee is Royal College of Physicians, Edinburgh.

QUERIES AND ANSWERS.

INCOME TAX.

"IN DOUBT" explains that A., B., and C. were in partnership. A. retired in December, 1917, selling his share of the practice, but not of the book debts, to D. He asks: What is the position with regard to payment of income tax on the book debts of the old firm?

*** A.'s liability ceases as from the date of his withdrawal from the firm; the new firm become liable to income tax on the basis of the previous earnings of A., B., and C. Assuming that the cash basis has been adopted and will be continued, it would seem to follow that B., C., and D. must compute their liability according to the full cash receipts of their present practice, including those debts (or an estimate of their amount) being paid to A. On that basis D. commences to pay tax on his share of the full earnings of the practice as from the date of his entry, even though the cash has not reached him, but will become entitled to the same ultimate treatment as A.—that is, he is liable for tax on unrealized profits now, but will not be liable for profits realized after his connexion with the new firm ceases.

LETTERS, NOTES, ETC.

QUININE IN BRONCHOPNEUMONIA.

DR. T. R. PROCTOR-SIMS (Canonbury) writes to record his experience as to the value of quinine in the bronchopneumonia of children: In the recent epidemic of influenza I had many cases to treat, and directly I detected the signs of bronchopneumonia in the lungs I put the child on quinine, with a previous dose of calomel if necessary. I did not lose a single case. The ages of the children ranged from 12 months to 12 years, and some were very ill when I first saw them. The surroundings and facilities for nursing were very bad in some cases, facts which give me all the more confidence in recommending the drug. I pressed it in doses proportionate to the child's age until the temperature began to fall. I then gave it twice or three times a day. For the restlessness and sleeplessness which so often accompany the disease I found nothing to equal brandy in carefully regulated doses.

SPIRITS FOR INFLUENZA.

THE Ministry of Food issued the following notice to the press on December 16th: In view of representations that have been made that there is in some districts a shortage of spirits required in treatment of patients suffering from influenza, arrangements are being made by the Ministry of Food that in the event of information reaching the Ministry indicating that an additional supply of spirits is necessary in any particular district for the treatment of such patients, the Ministry will direct a special supply to that district. Steps are being taken by the Ministry to obtain representative medical opinion as to the reality and extent of the need in the various localities affected. All bottles of spirit supplied for this purpose will bear distinctive labels, and will only be sold against a certificate from the doctor attending the patient.

TEMPORARY PEG LEGS.

A MAKER of artificial legs with forty years' practical experience sends us the following note:

Major Chapple's report on temporary pegs in your issue of November 30th (p. 597) is interesting and instructive; but neither he nor any other surgeon has yet noticed the importance of gradually weighting (with lead strips) the bottom end of pegs, to give the pendulum swing so important in walking. The craze for lightness in legs is illogical, and the absence of pendulum swing greatly increases the difficulty of control by the fragmentary muscles left on a short stump; hence the jerky sudden step of the wearer. When he gets his complete leg, weighing from 7 to 12 lb., he has to learn walking all over again. Some of my best walkers wear a lead plate in their boot to obtain this easy pendulum swing which matches the sound leg (weight about 18 lb.). The necessity for a contracting socket to compress and follow the shrinkage of the stump is obvious, but the gradual adding of weight to the peg end until it is *nearly* the weight of the finished jointed leg to come is never mentioned. The "Eaton gate" is the best practical temporary peg, as described by Major Chapple, and would be perfect if intelligently and gradually weighted at the foot for swing. The contracting thigh bucket should be made of the best bend leather, which makes a perfect socket for the finished jointed leg when required, and saves all waste of material.

COAL FOR INVALIDS.

DR. R. ACKERLEY (Llandrindod Wells) writes as follows with reference to the notification from the Coal Controller regarding additional rations for coal for invalids, published in the JOURNAL of November 23rd, p. 592: Is not the Controller badly advised? He says: "The only condition under which a medical certificate for an extra coal ration on account of illness should be given is where the patient is to remain in bed." I feel sure that other medical men will agree with me that the warmth of a fire is required much more when the patient begins to get up but is not yet able to leave the bedroom; and also that chronic invalids—such as sufferers from certain cardiac or pulmonary conditions, and also from rheumatism and arthritis—need the warm bedroom far more than those who remain in bed, as the latter can be kept sufficiently warm by hot-water bottles and extra blankets.

MESSRS. CADBURY of Bournville have for some considerable time prepared, at the suggestion of the Ministry of Food, a special preparation of sweetened cocoa and milk powder. The mixture makes a very palatable beverage which in the present shortage of milk should be very useful. The preparation can also be utilized for making plain chocolate by the addition of cocoa butter.

THE appointment of medical referee under the Workmen's Compensation Act, 1906, for the Dartford and Gravesend County Courts, Circuit No. 48, is vacant. Applications to the Private Secretary, Home Office, by January 6th.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Seven lines and under	0	6	0
Each additional line	0	0	9
Whole single column	4	0	0
Whole page	12	0	0

An average line contains six words.

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Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Wednesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.